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INSTITUTE OF EDUCATION SCIENCES

REQUEST FOR APPLICATIONS

Special Education Research Grants
CFDA Number: 84.324A

COMPETITION ROUND	Letter of Intent Due Date https://iesreview.ed.gov/	Application Package Available http://www.grants.gov/	Application Due Date http://www.grants.gov/
JUNE	April 19, 2012	April 19, 2012	June 21, 2012
SEPTEMBER	July 19, 2012	July 19, 2012	September 20, 2012

IES 2012 **U.S. Department of Education**

PART I OVERVIEW AND GENERAL REQUIREMENTS

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 Grants program. Through the Special Education Research Grants program, the Institute seeks to expand the knowledge base and understanding of infants, toddlers and children with disabilities through advancing the understanding of and practices for teaching, learning, and organizing education systems. For the FY 2013 competition, the Institute will consider only applications that meet the requirements outlined in this Request for Applications.

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 funded through the Institute's National Center for Education Research (http://ncer.ed.gov). An overview of the Institute's research grant programs is available at http://ies.ed.gov/funding/overview.asp.

When you apply to the Special Education Research Grants program, you must apply to one of the eleven research topics and one of the five research goals (discussed below under *2. General Requirements*). The research topic identifies the field you will be working in and the research goal identifies the type of work you will be doing within the field. Within the topic areas, investigators identify factors that may impact student outcomes; develop new and revise existing education interventions; evaluate the efficacy of fully developed interventions; evaluate the effectiveness of fully developed interventions; and develop and validate assessments. The Institute considers "interventions" to encompass curricula, instructional approaches, instructional supports, technology, and education practices, programs, and policies whose end purpose is to improve the education outcomes of students (student outcomes). Thus, all research supported under the Special Education Research Grants program must address student outcomes.

Through its Special Education Research grant program, the Institute supports research over a diverse set of child outcomes and for a range of purposes. The outcomes 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 or at risk for disabilities and functional outcomes that improve educational results and transitions to employment, independent living, and postsecondary education for students with disabilities. The Institute supports research on postsecondary and adult learners with and without disabilities through a different grant program run by the Institute's National Center for Education Research (http://ncer.ed.gov). However, under the Special Education Grants Program's topic Transition Outcomes for Secondary Students with Disabilities, the Institute supports research that follows students with disabilities after they exit from high school (see further detail in *Section 3. Changes in the FY 2013 Request for Applications)*.

The work of the Institute is grounded in the principle that effective education research must address the interests and needs of education practitioners and policymakers, as well as students, parents and community members (see http://ies.ed.gov/director/board/priorities.asp for the Institute's priorities). The Institute encourages researchers to develop partnerships with education stakeholder groups to advance the relevance of their work, the accessibility of their publications, and the usability of their findings for the day-to-day work of education practitioners and policymakers.

2. GENERAL REQUIREMENTS

A. Applying to a Topic

For the FY 2013 Special Education Research Grants program, you must submit your application to only one of the eleven research topics (described in *Part II Research Grant Topics)* that include: Autism Spectrum Disorders; Cognition and Student Learning in Special Education; Early Intervention and Early Learning in Special Education; Families of Children with Disabilities; Mathematics and Science Education;

Professional Development for Teachers and Related Services Providers; Reading, Writing, and Language Development; Social and Behavioral Outcomes to Support Learning; Special Education Policy, Finance, and Systems; Technology for Special Education; and Transition Outcomes for Secondary Students with Disabilities. **If you do not identify the specific topic under which your application should be considered on the SF-424 Form (Item 4b) of the Application Package, the Institute may reject the application as noncompliant with the requirements of this Request for Applications.**

The Institute recognizes that there are times when an application may fit under more than one topic. For example, an application to develop technology to support the development of mathematical skills could fit under the Technology for Special Education topic or the Mathematics and Science Education topic. You may choose to submit to any research topic as long as your application meets the specific sample and content requirements listed for that research topic.

You may submit applications to more than one of the Institute's FY 2013 grant programs or topics. In addition, within a particular grant program or topic, you may submit multiple applications. However, you may submit a given application only once (i.e., you may not submit the same application or similar applications to multiple grant programs, multiple topics, or multiple times within the same topic). In addition, if you submit an application for the June 2012 deadline, you may not submit the same or a similar application to the September 2012 deadline. If you submit the same or similar applications, the Institute will determine whether and which of your applications will be accepted for review and/or will be eligible for funding.

B. Requirement to Focus on Children 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). 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).

The Institute encourages research on high-incidence and low-incidence disabilities, and English learners with disabilities, across all topic areas and goals.

If you are applying to the Transition Outcomes for Secondary Students with Disabilities, Autism Spectrum Disorders, or Families of Children with Disabilities topics, you may *only* study students with disabilities and may not study students at risk for a disability.

For all other topics, **you may propose to study children who are *at risk for developing disabilities***. 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 specific disabilities. The determination of at risk for disabilities status must be made on an *individual child basis* and may include, for example, factors used for moving children to higher tiers in a Response to Intervention model. *The method to be used for determining if a child is at risk for developing a specific disability must be made explicit in applications and must be completed as part of the sample selection process.* Evidence consisting only of general population characteristics (e.g., labeling children as "at risk for disabilities" because they are from low income families or are English

learners) is *not* sufficient for this purpose. In addition, you must identify the disability or disability categories that the sampled children are at risk of developing.

As noted above, the focus of your research must be on students with or at risk for disabilities. However, across all topics, students without disabilities may be included in your sample (e.g., an inclusive classroom) if appropriate for the research questions. For example, students without disabilities may be part of the comparison population or part of the research sample for assessment development and validation.

C. Applying to a Research Goal

For the FY 2013 Education Research Grants program, you must submit your application to one of the five research goals: Exploration*;* Development and Innovation; Efficacy and Replication; Effectiveness; or Measurement. The specific requirements of each goal are described in *Part III Research Goals*. **If you do not identify the specific goal under which your application should be considered on the SF-424 Form (Item 4b) of the Application Package, the Institute may reject the application as noncompliant with the requirements of this Request for Applications.**

A brief description of the research goals is presented below with the full description given in *Part III*. The research goals are designed to span the range from basic research with practical implications to applied research (the latter includes development of education interventions and assessments, and the evaluation of the impact of interventions when implemented under both ideal conditions and conditions of routine practice).

Project Goal	
Exploration	Research supported under the Exploration goal identifies (1) malleable factors that are associated with education outcomes for students (student outcomes) and (2) factors and conditions that may mediate or moderate the relations between malleable factors and student outcomes. This identification is to be done through the analysis of data (collected by the project and/or using a secondary data set) or the meta-analysis of research studies. By *malleable factors*, the Institute means factors that can be changed by the education system such as children's behaviors, teachers' practices, education programs and their components, school or district management practices, or education policies. Projects under the Exploration goal are to (a) generate hypotheses regarding the potential causal relations between malleable factors and education outcomes, (b) contribute to theories of change for education interventions, (c) contribute to the development of interventions that can improve student outcomes or to identify the conditions that are associated with better implementation of interventions and (d) identify potentially beneficial interventions.
Development and Innovation	Research supported under the Development and Innovation goal develops innovative education interventions and improves existing education interventions that are to produce beneficial impacts on student outcomes when implemented in authentic education delivery settings (e.g., classrooms, schools, districts). The Institute considers interventions to encompass curricula, instructional approaches, technology, education practices, programs, and policies. An iterative development process is expected to be used including a cycle of development, implementation, observation, and revision. The cycle is to continue until the interventions can be shown to be usable by the intended end users and feasible for use within the intended authentic delivery setting. A pilot study is done to determine if there is evidence of the promise of the intervention for achieving its

intended student outcomes. The Institute expects that a finding of strong evidence of promise will lead to further research under the Efficacy and Replication goal.

Efficacy and Replication

Research supported under the Efficacy and Replication goal determines whether or not fully developed interventions produce a beneficial impact on student outcomes (and the practical importance of that impact) relative to a counterfactual when implemented in authentic education delivery settings. Interventions can be implemented under ideal conditions which may include use of greater implementation support or a more homogeneous sample than would be expected under routine practice.

The interventions tested under the Efficacy and Replication goal include newly developed interventions as well as long standing ones in widespread use. The vast majority of the education programs, practices, and policies implemented in U.S. schools have never been rigorously evaluated to determine if they are able to improve student outcomes relative to any other education intervention. Efficacy and Replication projects may provide the first evaluation of an intervention, may evaluate an already evaluated intervention but under a different set of conditions (these conditions can include a change in the sample, or a change in the intervention or how it is implemented), or may follow the longer-term impacts of a previous evaluation. Efficacy and Replication projects are to provide causal analysis and randomized controlled trials are the favored research design as well as single-case experimental designs with appropriate justification (see *Part III 15 C.b. Additional Requirements for Single-Case Experimental Designs Proposed as the Primary Design for Efficacy Studies*. Strong quasi-experimental designs can also be used.

Efficacy and Replication projects also examine the fidelity of implementation of the intervention both to determine how feasible the use of the intervention is and to identify the organizational supports, tools, and procedures that may be needed for sufficient implementation of the core components of the intervention. Interventions that are difficult to implement with fidelity under ideal conditions are unlikely to be implemented well when the intervention is implemented under conditions of routine practice.

Effectiveness

Research supported under the Effectiveness goal (previously called "Scale-up Evaluation") determines whether or not fully developed interventions with prior evidence of efficacy produce a beneficial impact on education outcomes for students (student outcomes) relative to a counterfactual when they are implemented under routine practice in authentic education delivery settings. "Routine practice" refers to the type of implementation that would occur if a school or district were to implement the intervention on its own without special support from the developer or research team.

Effectiveness projects, like Efficacy and Replication projects, are to provide a causal evaluation of an intervention as well as examine the intervention's fidelity of implementation. Before an Effectiveness project can be proposed, at least two evaluations of the intervention, that meet the requirements under the Efficacy and Replication goal, must show beneficial and practical impacts on student outcomes. In addition, the evaluation team must be independent from the developer/distributor of the intervention.

Measurement

Research supported under the Measurement goal supports (1) the development of new assessments or refinement of existing assessments and the validation of these assessments or (2) the validation of existing assessments for specific purposes,

contexts, and populations. Under *refinement*, the Institute includes changing existing assessments or changing the delivery of existing assessments in order to increase efficiency, improve measurement, improve accessibility, or provide accommodation for test takers. Proposed assessments must meet the specific content and sample requirements detailed under the topic to which the application is submitted.

Measurement projects include assessments intended to assess students (e.g., for screening, progress monitoring, formative assessment, outcome assessment), education professionals (e.g., credentialing or evaluation of teachers, principals, and related service providers), and/or education systems (e.g., accountability standards). All assessments developed and/or validated must be either directly or indirectly related to measures of student academic outcomes.

The goal structure of the Special Education Research Grants program divides the research process into stages for both theoretical and practical purposes. Individually the goals are intended to help focus the work of researchers while together they 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. Under the Exploration goal, researchers generate hypotheses about the components and processes involved in learning and instruction and in the operation of education systems and develop models about how they think systems and processes function to bring about education outcomes. Practically, Exploration projects provide the empirical justification for developing or refining an intervention or assessment. Under Development and Innovation, 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. Practically, researchers not only develop the intervention but also show its usability and its feasibility in a real-world education setting, and collect pilot data on its promise for improving student outcomes that may justify the intervention's evaluation. Efficacy and Replication projects evaluate the impact of specific interventions under ideal conditions. Effectiveness projects assess the impact of specific interventions when implemented under routine practice. Both Efficacy and Replication projects and Effectiveness projects constitute tests of the theory. Results from these studies should inform further theory development and refinement. Practically, evaluations identify which programs and policies actually produce positive effects on student outcomes, which need more work, and which should be discarded.

Education has always produced new ideas, new innovations, and new approaches but only appropriate empirical evaluation can identify those that are in fact improvements. Taken together, work across the various goals should not only yield information on the practical benefits about the effects of specific interventions on education outcomes but also contribute to more general scientific knowledge and theory on learning, instruction, and education systems.

D. Resubmissions

If you intend to revise and resubmit an application that was submitted to one of the Institute's previous competitions but that was not funded, you must indicate on the SF-424 Form of the Application Package (Items 4a and 8) that the FY 2013 application is a resubmission (Item 8) and include the application number of the previous application (an 11 character alphanumeric identifier beginning "R305" or "R324" entered in Item 4a). The prior reviews will be sent to this year's reviewers along with the resubmitted application. You must describe your response to the prior reviews using no more than 3 pages of Appendix A. Revised and resubmitted applications will be reviewed according to the FY 2013 Request for Applications.

If you submitted a somewhat similar application in the past but are submitting the current application as a new application, you must indicate on the application form that the FY 2013 application is a new application. You should provide a rationale explaining why the FY 2013 application should be considered to be a new application rather than a revision at the beginning of Appendix A using no more than 3 pages. Without such an explanation, if the Institute determines that the current application is similar to a

previously unfunded application, the Institute may send the reviews of the prior unfunded application to this year's reviewers along with the current application.

3. CHANGES IN THE FY 2013 REQUEST FOR APPLICATIONS

There are a number of changes to the Special Education Research Grants program (CFDA 84.324A) in FY 2013. You should carefully read the requirements listed under each topic in *Part II*, each goal in *Part III* and under the general submission requirements in *Part IV*. Major changes include the following.

The writing style has been modified to address federal requirements for the use of plain language (see http://www.plainlanguage.gov).

The research topics have been organized alphabetically.

The Technology for Special Education research topic now allows Exploration work.

The title of the Transition topic is changed to Transition Outcomes for Secondary Students with Disabilities. This topic now allows for intervention projects to continue an intervention that began in secondary school settings to postsecondary settings as a bridge to improving post school outcomes.

The Institute has modified the requirements for each of the research goals.

- For the Exploration goal, the prohibition on proposing studies that are to provide causal evidence of the impacts of an intervention on student outcomes has been made more explicit.
- For the Development and Innovation goal, acceptable research designs for the pilot study have been made more explicit.
- For the Development and Innovation goal, you can request a 4-year award if you are proposing to develop a lengthy intervention (e.g., a year-long curriculum) or an intervention that requires a long pilot study because it is expected to take additional time to affect students (e.g., a principal training program that is intended to improve instruction).
- For the Efficacy and Replication goal, the source for evidence of promise of an intervention's effects has been more closely tied to the acceptable research designs described for the pilot study in the Development and Innovation goal.
- The fourth research goal has been renamed "Effectiveness" (previously it was named "Scale-up Evaluation"). To apply under the Effectiveness goal, you must:
    - have causal evidence of the intervention's efficacy from at least two previous studies and
    - include a data sharing plan in which you detail how you will release the data you collect for other researchers and practitioners to use.
- For the Measurement goal, the distinction between projects developing or refining assessments and then validating them versus projects validating existing assessments has been made more explicit.

The Institute has set maximum awards for each research goal. Applications that propose budgets higher than the allowable maximum will be found nonresponsive to the Request for Applications and will not be accepted for review.

To reiterate, the Institute recommends that you carefully read all of the requirements regarding the research topics and research goals provided in *Part II and Part III* and that you contact the program officer for the appropriate research topic (listed in *Section 34*).

PART II RESEARCH GRANT TOPICS

4. AUTISM SPECTRUM DISORDERS

Program Officer: Dr. Amy Sussman (202-219-2126; Amy.Sussman@ed.gov)

A. Purpose

Through its research program on Autism Spectrum Disorders (ASD), the Institute supports research that contributes to the improvement of developmental, cognitive, communicative, academic, social, behavioral, and functional outcomes of students identified with ASD from preschool through Grade 12. The long-term outcome of this program will be an array of comprehensive programs and assessments (i.e., those designed to address multiple outcomes) 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[1].

B. Background

According to the Centers for Disease Control and Prevention (2009), one in 110 children is classified as having an ASD. This prevalence creates 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 research on the development, implementation, and evaluation of *comprehensive school-based interventions* intended to improve outcomes for students identified with ASD. By comprehensive intervention, the Institute means an intervention that is designed to address multiple outcomes, which include two or more of the following categories: developmental, cognitive, communicative, academic, social, behavioral, or functional outcomes.

The Institute encourages researchers to develop innovative, modify existing, or rigorously evaluate fully-developed *comprehensive school-based interventions*. For example, you might propose a Development and Innovation project to develop an integrated literacy and social skill intervention designed to be delivered by teachers for students in kindergarten through third grade with ASD and intended to improve academic, social, and communication outcomes. As another example, you might propose an Efficacy and Replication study to evaluate 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 you 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 also 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.

[1] Applicants interested in research on infants or toddlers should refer to the Early Intervention and Early Learning in Special Education topic.

In addition, the Institute encourages researchers to propose an Exploration study 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*.

C. Specific Requirements

To ensure that your application is responsive and therefore sent forward for scientific peer review, you must follow the requirements for the goal that you select for your application (see *Part III Research Goals)* and the sample and content requirements for the ASD topic.

Submission to a specific goal

You must submit your ASD application under one of five research goals:

1) Goal 1: Exploration,
2) Goal 2: Development and Innovation,
3) Goal 3: Efficacy and Replication,
4) Goal 4: Effectiveness, or
5) Goal 5: Measurement.

Focus on children with disabilities

This research program is restricted to special education research for students with disabilities. Applicants proposing to study students at risk for disabilities are *not* eligible to submit to the ASD research program. Please adhere to the requirements described in *Part I Section B Requirement to Focus on Children with Disabilities*.

Sample requirements

- Research must address students with identified ASD at any grade level from preschool through Grade 12.

Content requirements

- Research must be relevant to comprehensive interventions and must address in a coordinated fashion *multiple* outcomes, which include two or more of the following categories: developmental, cognitive, communicative, academic, social, behavioral, or functional outcomes.

- Applications under the Measurement goal must address two or more of the following outcomes: developmental, cognitive, communicative, academic, social, behavioral, or functional skills.

- 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, or that focuses on students at risk for disabilities, 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 Learning in Special Education).

You should contact Dr. Amy Sussman, program officer for the ASD topic at 202-219-2126 or Amy.Sussman@ed.gov to ensure that your project idea is appropriate for the ASD topic and the goal you select.

5. COGNITION AND STUDENT LEARNING IN SPECIAL EDUCATION

Program Officer: Dr. Amy Sussman (202-219-2126; Amy.Sussman@ed.gov)

A. Purpose

Through its research program on Cognition and Student Learning in Special Education (Cognition), the Institute supports research that contributes to the improvement of developmental outcomes for infants and toddlers with disabilities or at risk for disabilities and learning for students with disabilities or at risk for disabilities. 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 demonstrated effective for improving developmental outcomes for infants and toddlers with or at risk for disabilities and learning for students with or at risk for disabilities in preschool through Grade 12.

B. Background

A critical outcome of education is student learning. Recent advances in understanding learning have come from the cognitive sciences, including cognitive psychology, developmental psychology, and cognitive neuroscience. However, these advances have not been widely or systematically tested in education in general or special education (e.g., Carver & Klahr, 2001). 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 the cognitive sciences and applying them to special education practice. The purpose of this research is to improve developmental outcomes for infants and toddlers with or at risk for disabilities and learning and academic outcomes for students with or at risk for disabilities.

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, "learning" in laboratory experiments is often characterized differently than 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 or at risk for high- or low-incidence disabilities. For example, you might propose a Development and Innovation project to 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 students with reading disabilities to attend to and distinguish main ideas from extraneous details. As another example, you might propose an Efficacy and Replication project to conduct an evaluation of whether an intervention intending to improve executive function skills enhances school readiness skills in preschoolers with intellectual disability.

In addition to intervention development and evaluation, the Institute invites Measurement applications to develop and validate instruments, including alternative test formats, designed to assess a range of cognitive competencies, or cognitive misconceptions, in children with disabilities.

The Institute also funds Exploration projects designed to explore the cognitive processes underlying the acquisition of developmental skills for infants and toddlers with or at risk for disabilities, and communication, language, reading, writing, mathematics knowledge and skills, science knowledge and skills, or general study skills for children with or at risk for disabilities. This is translational research that is ultimately intended to inform the development of innovative interventions to improve outcomes for students with disabilities. Exploration studies may be based in a laboratory or an educational setting. *For Exploration applications to be competitive*, you should make explicit the hypothesized link between the underlying cognitive process and improving developmental outcomes or academic achievement, and not simply examine cognitive processes. For example, you could propose an exploration study that includes short-term longitudinal studies in which the objective is to identify the component skills that are (a) highly correlated with child outcomes and (b) may be improved, accelerated, or advanced through intervention (e.g., curricula or instructional approaches).

As appropriate, applicants may also investigate brain-behavior relationships as they relate to developmental and academic skills. For example, you may want to explore which regions of the brain demonstrate increased activity in children with reading disabilities while performing cognitive tasks such as phonological processing, and examine whether targeted interventions are associated with increased activity in those areas (e.g., Simos et al., 2002). As with all Exploration applications, strong applications will 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 scientists who understand the variation in learner characteristics and teaching and learning in the context of authentic education settings.

C. Application Requirements

To ensure that your application is responsive and therefore sent forward for scientific peer review, you must follow the requirements for the goal that you select for your application (see *Part III Research Goals)* and the sample and content requirements for the Cognition topic.

Submission to a specific goal

You must submit your Cognition application under one of four research goals:

1) Goal 1: Exploration,
2) Goal 2: Development and Innovation,
3) Goal 3: Efficacy and Replication, or
4) Goal 5: Measurement.

Focus on children with or at risk for disabilities

This research program is restricted to special education research for infants, toddlers, young children, or students with or at risk for disabilities. Please adhere to the requirements described in *Part I Section B Requirement to Focus on Children with Disabilities*.

Sample requirements

- Your research must focus on infants, toddlers, or children from preschool through Grade 12 with high- or low-incidence disabilities, or at risk for disabilities. Students without disabilities may be included in the sample (e.g., an inclusive classroom, assessing children's progress relative to peers without disabilities) if appropriate for the research questions.

Content requirements

- Your research must focus on developmental or student outcomes in communication, language, reading, pre-reading, writing, pre-writing, mathematics, early mathematics, science, early science, or study skills.

Research setting requirements

- Under the Exploration and Measurement goals, your research may be conducted in laboratory and/or authentic education settings.

- Under Exploration, laboratory research with college students is allowable provided that within the award period you also examine the relation between the malleable factors and outcomes with the student population of interest.

- Under the Development and Innovation goal, the *majority* of your 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.

- The Efficacy and Replication goal is appropriate if you are proposing to evaluate fully developed interventions. The Institute does **not** support laboratory research under the Efficacy and Replication goal. Interventions that are ready to be evaluated through efficacy trials must be fully developed and ready to be implemented in authentic education settings.

Methods appropriate for Exploration and Development and Innovation studies

- Under Exploration and Development/Innovation, your research may involve small laboratory or classroom-based experiments to test hypotheses regarding the cognitive processes involved in a particular learning task.

You should contact Dr. Amy Sussman, program officer for the Cognition topic at 202-219-2126 or Amy.Sussman@ed.gov to ensure that your project idea is appropriate for the Cognition topic and the goal you select.

6. EARLY INTERVENTION AND EARLY LEARNING IN SPECIAL EDUCATION

Program Officer: Dr. Joan McLaughlin (202-219-1309; Joan.McLaughlin@ed.gov)

A. Purpose

Through its research program on Early Intervention and Early Learning in Special Education (Early Intervention), the Institute supports research that contributes to the improvement of developmental outcomes and school readiness of infants, toddlers, and young children (from birth through age 5) with disabilities or at risk for disabilities. 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

More than 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, 2011). 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). Under the Early Intervention research program, the

Institute supports research on early intervention practices, curricula, professional development, measurement, and systems-level programs and policies.

The Institute intends for its Early Intervention research program to support research on infants, toddlers, and young children with high- or low-incidence disabilities, or at risk for disabilities. Under the Early Intervention research program, the Institute supports research on interventions that are delivered to the child by early intervention specialists, teachers, related service providers (e.g., speech-language pathologists, physical therapists), or parents. Interventions may include training provided to parents to enable them to deliver interventions to their child. The Institute supports research to develop a new intervention or to test the efficacy of an existing intervention. For example, you may propose a Development and Innovation project to support parents of children with cochlear implants or hearing aids in their efforts to enhance their children's listening and language development.

Also appropriate under this topic is research on professional development programs intended to improve services to infants, toddlers, or young children with 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, you might propose an Efficacy and Replication project to evaluate a professional development training program for special educators to improve the early literacy skills of young children with developmental delays.

Under the Early Intervention topic, the Institute also encourages research on systemic interventions intended to directly or indirectly improve developmental outcomes or school readiness of infants, toddlers, or young children with 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 the development and validation of assessments for purposes such as screening, progress monitoring, or evaluating student outcomes or the effects of early intervention programs. For example you may propose a Measurement project to develop and validate measures that can be used not only for measuring infants' developmental outcomes, but also for determining early intervention program areas that need improvement and for providing data for accountability purposes.

The Institute also encourages you to conduct Exploration studies to explore malleable factors 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 or moderators of the relations between these factors and student outcomes, *for the purpose of identifying potential targets of intervention*. For example, you may propose to study the role of potentially malleable factors (including parenting practices and EI/ECSE services) in the onset of language delays during children's infant, toddler, and preschool years, and the consequences of these delays for school readiness.

C. Application Requirements

To ensure that your application is responsive and therefore sent forward for scientific peer review, you must follow the requirements for the goal that you select for your application (see *Part III Research Goals)* and the sample and content requirements for the Early Intervention topic.

Submission to a specific goal
You must submit your Early Intervention application under one of five research goals:

1) Goal 1: Exploration,
2) Goal 2: Development and Innovation,
3) Goal 3: Efficacy and Replication,
4) Goal 4: Effectiveness, or
5) Goal 5: Measurement.

Focus on children with or at risk for disabilities
This research program is restricted to early intervention and special education research for infants, toddlers, or young children with disabilities or at risk for disabilities. Please adhere to the requirements described in *Part I Section B Requirement to Focus on Children with Disabilities*.

Sample requirements

- Your research must focus on infants, toddlers, or young children (preschool or prekindergarten children) with high- or low-incidence disabilities, or at risk for disabilities. Students without disabilities may be included in the sample (e.g., an inclusive classroom) if appropriate for the research questions.

- For research that spans early childhood and the early elementary grades, you may choose to submit the application to the Early Intervention program or to the appropriate content area (e.g., Reading, Writing, and Language Development; Mathematics and Science Education; Social and Behavioral Outcomes to Support Learning).

Content requirements

- Your research must focus on infants, toddlers, or young children (preschool or prekindergarten children) with high- or low-incidence disabilities, or at risk for disabilities. Students without disabilities may be included in the sample (e.g., an inclusive classroom) if appropriate for the research questions.

- Your research must address either developmental outcomes pertaining to cognitive, communicative, linguistic, social, emotional, adaptive, functional or physical development or school readiness outcomes (i.e., reading, pre-reading, pre-writing, early mathematics, early science, or social-emotional skills that prepare young children for school).

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

- Under the Measurement goal, 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 related to measures of child outcomes.

- You must include measures of child outcomes (e.g., developmental or school readiness outcomes).

You should contact Dr. Joan McLaughlin, program officer for the Early Intervention topic at 202-219-1309 or Joan.McLaughlin@ed.gov to ensure that your project idea is appropriate for the Early Intervention topic and the goal you select.

7. FAMILIES OF CHILDREN WITH DISABILITIES

Program Officer: Dr. Amy Sussman (202-219-2126; Amy.Sussman@ed.gov)

A. Purpose

Through its research program on Families of Children with Disabilities (Families), the Institute supports research that contributes to the identification of effective strategies for improving family involvement in the education of their child with a disability and family support of their child with a disability in ways that improve educational or transition outcomes for students with disabilities from kindergarten through Grade 12[2].

The long-term outcome of this program will be an array of tools and strategies (e.g., assessment tools, programs, services, interventions) that have been documented to be effective for improving family involvement and support of children with disabilities in ways that ultimately improve educational or transition outcomes of students with disabilities from kindergarten through Grade 12.

B. Background

There is a long-standing belief that parent involvement in education and strong family–school partnerships are critical for achieving optimal developmental outcomes and educational success for students with disabilities (e.g., Booth & Dunn, 1996; Dunst & Wolery, 1997, as cited in Dunst, 2002). Legislation supports this thesis: The Individuals with Disabilities Education Act (IDEA) mandates parental rights and involvement in their child's education. As active members of their child's Individualized Education Program (IEP) team, parents act in partnership with school personnel in planning and making educational decisions about their child with a disability.

Little is known, however, about effective ways for supporting the involvement of parents of children with disabilities in ways that improve the educational, social, behavioral, functional, or transition outcomes of children with disabilities. There are few rigorous empirical studies examining the extent to which increased family involvement in a child's education leads to better student educational outcomes. Where there have been rigorous evaluations, further replication and analyses are needed to understand for whom and under what conditions the interventions work. Similarly, relatively little rigorous research has been conducted on approaches for enabling parents to intervene with their child in ways that support or coordinate with interventions that the child receives at school.

The Institute intends for its Families research program to support research on families of students from kindergarten through Grade 12 with high- or low-incidence disabilities. Under this topic, researchers are invited to propose rigorous research projects to develop innovative family involvement interventions or evaluate existing interventions. You may, for example, propose a Development and Innovation project to develop strategies for enabling parents to intervene with their child at home in ways that coordinate with or support interventions delivered to the child at school. Another example may be an Efficacy and Replication project to evaluate an intervention intended to improve parents' involvement in their child's education and the impact of that intervention on student academic outcomes. The Institute also encourages research on ways to improve teachers' abilities to work with and support families who have a child with a disability. Interventions may also include training provided to parents to enable them to deliver interventions to their child.

[2] Applicants interested in research on families of infants, toddlers, and preschool children should refer to the Early Intervention and Early Learning in Special Education topic.

The Institute also supports Measurement research on the development and validation of assessments. For example, you may propose a Measurement project to develop and validate an assessment of family engagement in the schools for families of students with disabilities.

In addition to research on family interventions and measures, the Institute supports Exploration projects to investigate the relations between malleable factors (i.e., variables that can be changed, such as education practices) and education outcomes to identify *potential targets of intervention*.

C. Specific Requirements

To ensure that your application is responsive and therefore sent forward for scientific peer review, you must follow the requirements for the goal that you select for your application (see *Part III Research Goals)* and the sample and content requirements for the Families topic.

Submission to a specific goal

You must submit your Families application under one of five research goals:

1) Goal 1: Exploration,
2) Goal 2: Development and Innovation,
3) Goal 3: Efficacy and Replication,
4) Goal 4: Effectiveness, or
5) Goal 5: Measurement.

Focus on children with disabilities

This research program is restricted to special education research for students with disabilities. Applicants proposing to study students at risk for developing disabilities are *not* eligible to submit to the Families research program. Please adhere to the requirements described in *Part I Section B Requirement to Focus on Children with Disabilities*.

Sample requirements

- Research must focus on children in kindergarten through Grade 12 who have high- or low-incidence disabilities.

Content requirements

- Interventions must be school-based interventions (i.e., programs must be coordinated through the school or district). However, the delivery of the intervention may occur in other settings (e.g., home).

- Research must address either education or transition 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, goals identified on students' IEPs). 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., college, vocational education programs).

- Interventions that target parents directly must be interventions that are intended to support students' educational or transition outcomes.

- All applicants must include measures of the child outcomes that are intended to be improved.

You should contact Dr. Amy Sussman, program officer for the Families topic at 202-219-2126 or Amy.Sussman@ed.gov to ensure that your project idea is appropriate for the Families topic and the goal you select.

8. MATHEMATICS AND SCIENCE EDUCATION

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

A. Purpose

Through its research program on Mathematics and Science Education (Math/Science), the Institute supports research that contributes to the improvement of mathematics and science outcomes for students with disabilities or at risk for disabilities from kindergarten through Grade 12. 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 or at risk for disabilities from kindergarten through Grade 12.

The Institute recognizes that 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 applications to develop or test different theoretically-based approaches for teaching mathematics or science to students with disabilities.

B. Background

Students with disabilities lag behind their peers without disabilities in both mathematics and science achievement. For example, in the 2011 National Assessment of Educational Progress (NAEP) mathematics assessment, 64 percent of Grade 8 students with disabilities who participated in the assessment scored below the basic level compared to 22 percent of students without disabilities. In the 2009 NAEP science assessment, 69 percent of Grade 8 students with disabilities who participated in the assessment scored below the basic level in the science assessment compared to 33 percent of Grade 8 students without disabilities.

Through the Math/Science program, the Institute encourages research that contributes to knowledge and theory about the development of mathematics or science knowledge and skills among children with disabilities. You may, for example, examine underlying developmental processes by proposing an Exploration project to study malleable factors (i.e., variables that can be changed, such as 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*.

Through this program, the Institute is primarily interested in research that addresses core mathematics and science content (e.g., Mathematics: addition/subtraction, fractions, algebra, geometry, trigonometry, calculus; Science: physical science, earth science, life science).

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 school staff. The Institute supports research to develop a new intervention or to test the efficacy of an existing intervention. For example, a number of interventions (e.g., Nemeth code tutorials for students or teachers) have been developed to make mathematics or science content more accessible for students with blindness, visual impairments, deafness, or hearing impairments. Relatively little systematic research has been conducted on the impact of interventions such as these, and the Institute encourages you to propose Efficacy and Replication projects to examine the effect of such interventions on learning outcomes for students with disabilities. Under the Math/Science special education research program, the Institute accepts applications on interventions that could be used as a tier in a Response to Intervention model (e.g., a mathematics intervention delivered in small groups for students who do not make appropriate progress in the general curriculum).

In addition, the Institute invites Measurement applications 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. Application Requirements

To ensure that your application is responsive and therefore sent forward for scientific peer review, you must follow the requirements for the goal that you select for your application (see *Part III Research Goals)* and the sample and content requirements for the Math/Science topic.

Submission to a specific goal

You must submit your Math/Science application under one of five research goals:

1) Goal 1: Exploration,
2) Goal 2: Development and Innovation,
3) Goal 3: Efficacy and Replication,
4) Goal 4: Effectiveness, or
5) Goal 5: Measurement.

Focus on children with or at risk for disabilities

This research program is restricted to special education research for students with disabilities or at risk for disabilities. Please adhere to the requirements described in *Part I Section B Requirement to Focus on Children with Disabilities*.

Sample requirements

- Your research must focus on children with high- or low-incidence disabilities, or at risk for disabilities from kindergarten through Grade 12. Students without disabilities may be included in the sample (e.g., an inclusive classroom, assessing children's progress relative to peers without disabilities) if appropriate for the research questions.

- For research that spans early childhood and the early elementary grades, you may choose to submit the application to the Early Intervention program or to the Math/Science program.

Content requirements

- Your research must address mathematics, early mathematics, science, or early science outcomes.

- 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.

- You must include measures of mathematics, early mathematics, science, or early science outcomes.

You should contact Dr. Rob Ochsendorf, program officer for the Math/Science topic at 202-219-2234 or Robert.Ochsendorf@ed.gov to ensure that your project idea is appropriate for the Math/Science topic and the goal you select.

9. PROFESSIONAL DEVELOPMENT FOR TEACHERS AND RELATED SERVICES PROVIDERS

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

A. Purpose

Through its research program on Professional Development for Teachers and Related Services Providers (Professional Development), the Institute supports research that contributes to the identification of effective strategies for improving the performance of current teachers, other instructional personnel, and related services providers in ways that increase reading, writing, language, mathematics, science, social, behavioral, or secondary transition outcomes, as well as functional skills that improve the educational outcomes of students with disabilities or at risk for disabilities from kindergarten through Grade 12.[3] Long-term outcomes of the Professional Development program will be an array of tools and strategies (e.g., in-service programs, teacher supports, and assessments) that have been demonstrated to be effective for improving and assessing performance of teachers, related services providers, 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 special education teachers, general education teachers who teach students with disabilities, related services providers, or other instructional personnel. Under this program, the Institute does not provide support for development of or research on professional certificate programs and other training programs intended to give non-special education teachers or personnel certification in special education or related services. By "teachers, related services providers, and other instructional personnel," the Institute refers to special education teachers, general education teachers, paraprofessionals, teacher consultants and specialists, related services providers, and other personnel involved in the instruction and school support of students with or at risk for disabilities.

B. Background

Most students with disabilities (95%) are educated in school buildings attended by their peers without disabilities, and more than half of all students with disabilities (54%) are educated in the general education classroom for most of the school day (U.S. Department of Education, 2011). 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). Through the Professional Development research program, the Institute funds research to improve professional development activities for special education teachers and general education teachers of students with disabilities.

In addition to instruction provided by general and special education teachers, 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. Through the Professional Development research program, the Institute supports research to improve related services for students with disabilities.

The Institute recognizes that a variety of personnel other than teachers and related services providers may have responsibility for providing instruction or services to students with or at risk for disabilities. These personnel include, for example, paraprofessionals, instructional aides, remedial teachers, one-on-one aides, student job coaches, media and technology specialists, and behavior coaches. Through the

[3] Applicants interested in professional development for teachers and other personnel who work with infants, toddlers, and preschool children should see the Early Intervention and Early Learning in Special Education topic.

Professional Development program, the Institute also supports research on professional development programs for other instructional personnel who instruct or provide services to students with or at risk for disabilities.

The Institute supports research to develop a new professional development intervention or to test the efficacy of an existing intervention. For example, you might propose a Development and Innovation project 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. Research on 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). 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 content (e.g., instructional practices or intervening strategies) that has already been shown to be effective for improving student outcomes. In all instances, the Institute encourages researchers to design studies that will provide evidence to help rule out competing hypotheses. For example, you may propose an Efficacy and Replication project 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 control condition (e.g., whatever professional development training is typically provided by the district). In this design, the research would test whether the practices of the occupational therapists changed, as well as whether the intervention indirectly improved students' fine motor skills and writing outcomes.

In addition to research on professional development interventions, the Institute supports Measurement research on the development of practical assessments of subject matter knowledge, pedagogical knowledge, and instructional skills – such as measures that might be used by school administrators to provide feedback to teachers or other service providers 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 also encourages researchers to explore the relations between malleable factors (i.e., variables that can be changed, such as 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.* For example, you might propose an Exploration project 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 is to identify the specific practices and strategies employed by teachers 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. Application Requirements

To ensure that your application is responsive and therefore sent forward for scientific peer review, you must follow the requirements for the goal that you select for your application (see *Part III Research Goals)* and the sample and content requirements for the Professional Development topic.

Submission to a specific goal
You must submit your Professional Development application under one of five research goals:

1) Goal 1: Exploration,
2) Goal 2: Development and Innovation,
3) Goal 3: Efficacy and Replication,
4) Goal 4: Effectiveness, or
5) Goal 5: Measurement.

Focus on children with disabilities
This research program is restricted to special education research for students with disabilities or depending on the topic, students at risk for developing disabilities. See content and sample requirements below. Please also adhere to the requirements described in *Part I Section B Requirement to Focus on Children with Disabilities*.

Sample requirements

- Your research must be relevant to working with students with disabilities or at risk for disabilities from kindergarten through Grade 12. If related service outcomes are the outcomes of interest, then the research must be relevant to students *with* disabilities only. If secondary transition outcomes are the student outcomes of interest, then the research must be relevant to secondary (middle or high school) students *with* disabilities only. Students without disabilities may be included in the sample (e.g., an inclusive classroom, assessing children's progress relative to peers without disabilities) if appropriate for the research questions.
- Applicants interested in professional development for prekindergarten teachers or related services providers should apply to the Early Intervention and Early Learning in Special Education research program. If the research spans prekindergarten and early elementary grades, applicants may apply under either topic.

Content requirements

- Research must address one or more of the following child outcomes: cognitive, communication, language, reading, pre-reading, writing, pre-writing, mathematics, early mathematics, science, early science, study skills, social skills, emotional and behavioral skills, adaptive skills, functional skills, or secondary transitional skills.
- Eligible interventions are professional development training, tools or other supports (e.g., information resources) for teachers, related services providers, and other instructional personnel or service providers. Professional development refers to in-service training, tools and other supports, and must be for current personnel. Pre-service training of prospective teachers, related services providers, or other instructional personnel is *not* eligible for support under this research program. In addition, the Institute does not provide support for development of or research on professional certificate programs and other training programs intended to give non-special education teachers or personnel certification in special education or related services.
- 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, and social work services in schools. Applicants interested in parent training should apply to the Families of Children with Disabilities research program.
- Interventions must be school-based interventions (i.e., programs must be coordinated through the school or district).

- Applicants focused primarily on curriculum or instructional practices that also include a professional development component are more appropriately directed to the Reading/Language or Math/Science topics.
- All applicants must include measures of child outcomes as well as measures of the behaviors of the teachers, related services providers, or other instructional personnel or service providers that are the target of the professional development.

You should contact Dr. Rob Ochsendorf, program officer for the Professional Development topic at 202-219-2234 or Robert.Ochsendorf@ed.gov to ensure that your project idea is appropriate for the Professional Development topic and the goal you select.

10. 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 or at risk for disabilities. 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 or 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 2011 National Assessment of Educational Progress (NAEP) indicates that 64 percent of eighth graders with disabilities who participated in the assessment scored below the basic level in reading achievement in contrast to 20 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 eighth graders with disabilities who take the NAEP do not understand what they have read. In writing, a similar picture emerges. On the 2007 NAEP writing assessment, 45 percent of Grade 8 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 to increase our understanding of the development of reading, writing, and language in students with disabilities, or at risk for disabilities, and, ultimately, to improve reading, writing, and language outcomes for students with disabilities, or at risk for disabilities, from kindergarten through Grade 12. The types of projects that are appropriate for this program are illustrated by, but not limited to, the examples provided below.

Under the Reading/Language research program, the Institute supports research on interventions for students with high- or low- incidence disabilities or at risk for disabilities that are delivered to the student by teachers, related service providers, or other school personnel. The Institute supports research to develop a new intervention or to test the efficacy of an existing intervention. For example, you might propose a Development and Innovation project to develop a series of instructional strategies to be delivered by a Speech-Language Pathologist to improve language/communication skills of students with significant intellectual disabilities. As another example, you could propose an Efficacy and Replication project to test the efficacy of a developed intervention designed to target early literacy skills of students who do not respond to a secondary-level intervention in a Response to Intervention model.

The Institute encourages the development and validation of assessments for purposes such as screening, progress monitoring, or evaluating outcomes in reading, writing, or language. For example, you could

propose a Measurement project to compare the relative predictive validity of short-term dynamic assessments versus progress monitoring instruments. The Institute is particularly interested in the development and validation of assessment instruments that are designed for use by practitioners.

The Institute encourages you to conduct Exploration studies to explore malleable factors (i.e., variables that can be changed, such as 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 students with disabilities or at risk for disabilities.

C. Application Requirements

To ensure that your application is responsive and therefore sent forward for scientific peer review, you must follow the requirements for the goal that you select for your application (see *Part III Research Goals)* and the sample and content requirements for the Reading/Language topic.

Submission to a specific goal

You must submit your Reading/Language application under one of five research goals:

1) Goal 1: Exploration,
2) Goal 2: Development and Innovation,
3) Goal 3: Efficacy and Replication,
4) Goal 4: Effectiveness, or
5) Goal 5: Measurement.

Focus on children with or at risk for disabilities

This research program is restricted to special education research for students with disabilities or at risk for disabilities**.** Please adhere to the requirements described in *Part I Section B Requirement to Focus on Children with Disabilities*.

Sample requirements

- Your research must focus on students with high- or low-incidence disabilities, or at risk for disabilities from kindergarten through Grade 12. Students without disabilities may be included in the sample (e.g., an inclusive classroom, assessing children's progress relative to peers without disabilities) if appropriate for the research questions.

- For research that spans early childhood and the early elementary grades, you may choose to submit the application to the Early Intervention and Early Language in Special Education program or to the Reading/Language program.

Content requirements

- Your research must address reading, pre-reading, writing, pre-writing, or language outcomes.

- 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.

- You must include student outcome measures of reading, pre-reading, writing, pre-writing, or language.

You should contact Dr. Kristen Lauer, program officer for the Reading/Language topic at 202-219-0377 or Kristen.Lauer@ed.gov to ensure that your project idea is appropriate for the Reading/Language topic and the goal you select.

11. SOCIAL AND BEHAVIORAL OUTCOMES TO SUPPORT LEARNING

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

A. Purpose

Through its research program on Social and Behavioral Outcomes to Support Learning (Social/Behavioral), the Institute supports research that contributes to the prevention or amelioration of behavior problems in students with or at risk for disabilities and concomitantly, improves their education outcomes. 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.

The Institute encourages research that integrates 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 encourages researchers to consider, for example, tailoring programs developed from a children's mental health perspective 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.

B. Background

Behavior problems continue to be a concern for school staff and parents of students with disabilities. Research on the efficacy of behavioral interventions and supports designed to manage, control, and prevent a range of behavior and antisocial problems (e.g., social skills deficits, 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. However, much remains to be done to understand and advance the application, scalability, and sustainability of these behavioral interventions and supports in school settings, particularly in alternative settings such as alternative schools or juvenile justice settings.

Under the Social/Behavioral research program, the Institute supports research on interventions to improve social or behavioral outcomes for students with high- or low-incidence disabilities, or at risk for disabilities. The Institute supports research to develop a new interventions or to test the efficacy of an existing intervention. For example, you may propose a Development project to develop an intervention to improve social skills and peer relations among students with learning disabilities and their peers. As another example, you may propose an Efficacy study to evaluate a classroom-based program intended to decrease problem behaviors (e.g., aggression, disruption) and increase appropriate behaviors (e.g., positive social interactions) for students with autism in inclusive classrooms, and improve their academic learning. 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.

In addition to research on social/behavioral interventions and measures, the Institute encourages Measurement projects to develop and validate assessments for purposes such as screening, progress monitoring, or evaluating social and behavioral outcomes. The Institute also supports Exploration projects to explore the relations between malleable factors (i.e., things that can be changed, such as student competencies and education practices) and education outcomes to identify *potential targets of*

intervention. 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.

C. Application Requirements

To ensure that your application is responsive and therefore sent forward for scientific peer review, you must follow the requirements for the goal that you select for your application (see *Part III Research Goals)* and the sample and content requirements for the Social/Behavioral topic.

Submission to a specific goal

You must submit your Social/Behavioral application under one of five research goals:

1) Goal 1: Exploration,
2) Goal 2: Development and Innovation,
3) Goal 3: Efficacy and Replication,
4) Goal 4: Effectiveness, or
5) Goal 5: Measurement.
6)

Focus on children with or at risk for disabilities

This research program is restricted to special education research for students with disabilities or at risk for disabilities. Please adhere to the requirements described in *Part I Section B Requirement to Focus on Children with Disabilities*.

Sample requirements

- Your research must focus on children with high- or low-incidence disabilities, or at risk for disabilities from kindergarten through Grade 12. Students without disabilities may be included in the sample (e.g., an inclusive classroom, assessing children's progress relative to peers without disabilities) if appropriate for the research questions.

- For research that spans early childhood and the early elementary grades, you may choose to submit the application to the Early Intervention and Early Language in Special Education program or to the Social/Behavioral program.

Content requirements

- Your research must address social, emotional, or behavioral outcomes that support learning.

- Interventions must be school-based interventions (i.e., programs must be coordinated through the school or district). However, the delivery of the intervention may occur in other settings (e.g., home settings, 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 working with a school district), or parents.

- You 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).

You should contact Dr. Jacquelyn Buckley, program officer for the Social/Behavioral topic at 202-219-2130 or Jacquelyn.Buckley@ed.gov to ensure that your project idea is appropriate for the Social/Behavioral topic and the goal you select.

12. SPECIAL EDUCATION POLICY, FINANCE, AND SYSTEMS

Program Officer: Dr. Amanda Hoffman, (202-208-1177; Amanda.Hoffman@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. 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.[4]

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 direct causal relations 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 disabilities or at risk for disabilities by identifying systemic processes, procedures, and programs 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[3]. For example, you might propose a Development and Innovation study to improve the coordination and communication between the IEP team and service providers with the goal of improving student outcomes. In addition, you might propose an Efficacy and Replication study to test the efficacy of a school-wide Response to Intervention (RTI) system compared to usual school practice. Under the Policy/Systems research program, if you are interested in RTI research, you must focus on the design and implementation of RTI approaches and not on the development of the secondary or tertiary interventions themselves. If you are interested in developing only secondary or tertiary interventions for RTI systems, you 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, you might propose an Efficacy and Replication study to evaluate the effect of offering annual financial bonuses on the recruitment and retention of special education teachers in hard-to-staff schools.

The Institute also welcomes research on outcome assessments used for large-scale accountability purposes. For example, you might propose a Measurement project 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

[4] Applicants interested in research on policies and systems related to services provided to infants, toddlers, and preschool children should refer to the Early Intervention and Early Learning in Special Education topic.

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 meet academic standards.

The Institute encourages research that explores meaningful links among special education financing, allocation of resources, and improvements in student outcomes. For example, you might propose an Exploration study to investigate the relationships among census-based or resource-based formulas for special education funding, the allocation of resources and services as documented on students' Individualized Education Programs, and improvements in academic outcomes. You might also explore other factors influencing the relationship among financing, resource allocation, and student outcomes.

C. Application Requirements

To ensure that your application is responsive and therefore sent forward for scientific peer review, you must follow the requirements for the goal that you select for your application (see *Part III Research Goals)* and the sample and content requirements for the Systems topic.

Submission to a specific goal

You must submit your Systems application under one of five research goals:

1) Goal 1: Exploration,
2) Goal 2: Development and Innovation,
3) Goal 3: Efficacy and Replication,
4) Goal 4: Effectiveness, or
5) Goal 5: Measurement.

Focus on children with or at risk for disabilities

This research program is restricted to special education research for students with disabilities or at risk for disabilities. Please adhere to the requirements described in *Part I Section B Requirement to Focus on Children with Disabilities*.

Sample requirements

- Applicants must address finance, policies, systemic interventions, or assessments relevant to the education of students with or at risk for disabilities from kindergarten through Grade 12.

- Applicants interested in finance, policies, systemic interventions, or assessments relevant to infants, toddlers, or young children (i.e., birth through age 5) should apply to the Early Intervention and Early Learning in Special Education research program. For research that spans early childhood and the early elementary grades, the applicant may choose to submit the application to the Early Intervention program or to the Policy/Systems program.

Content requirements

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

- Under the Measurement goal, assessments that can be used to evaluate implementation of systemic practices or policies must be validated against measures of student outcomes.

You should contact Dr. Amanda Hoffman, program officer for the Systems topic at 202-208-1177 or Amanda.Hoffman@ed.gov to ensure that your project idea is appropriate for the Systems topic and the goal you select.

13. TECHNOLOGY FOR SPECIAL EDUCATION

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

A. Purpose

Through its research program on Technology for Special Education (Technology), the Institute supports research on education technology tools that are designed to improve outcomes for infants, toddlers, preschool children, and students from kindergarten through Grade 12 with or at risk for disabilities. The long-term outcome of this program will be an array of education technology tools that have been documented to be effective for improving outcomes for children with or at risk for disabilities.

B. Background

Through the Technology research program, the Institute supports research on a wide-array of special education technology products that are intended (a) to improve reading, writing, mathematics, and science outcomes or general study skills for students with or at risk for disabilities from kindergarten through Grade 12; (b) to improve developmental outcomes or school readiness for infants, toddlers, preschoolers with or at risk for disabilities; (c) to assess student learning; (d) to improve social and behavioral, functional and adaptive outcomes for students with or at risk for disabilities from prekindergarten through Grade 12; and (d) to improve transition outcomes for secondary students with disabilities.

Under the Institute's Technology research program, researchers are invited to propose rigorous research projects to develop innovative education technology tools or evaluate existing education technology products. For example, the Institute encourages Development and Innovation applications to further develop technology-based interventions, such as simulations, multimedia, and virtual reality, to support students with physical disabilities as they experiment with science concepts or to support students with disabilities in learning science and mathematics (e.g., supported electronic text). Another example is research to develop technology to improve social cognition (e.g., facial recognition) in students with autism spectrum disorders. You may also be interested in developing technology-based assessments that provide teachers with real-time assessment data to inform subsequent instruction.

Also appropriate under this topic is research on technology to improve professional development of teachers, related services providers, or other instructional personnel who work with students with or at risk for disabilities. For example, you may propose an Efficacy and Replication project to test the effects of technology-based programs (e.g., interactive media-enhanced online modules) that provide teachers with information about instructional approaches and strategies on the reading comprehension skills of students with disabilities in middle school.

The Institute also encourages applications to develop and validate education technology measurement tools to be used for instructional purposes (e.g., progress monitoring). Through the Technology program, the Institute is interested in Measurement applications to develop and evaluate new products, as well as applications to evaluate the effects of existing products (including commercially available products) on student outcomes.

Competitive applications will have a strong rationale for the developmental appropriateness of the product's user-interface design for the targeted students as well as a strong theoretical, pedagogical, and empirical justification for the scope and sequence of the content. The Institute strongly encourages you to assemble research teams that collectively have expertise in special education or early intervention, the development of advanced technology, instructional design, the targeted content domain (e.g., reading, mathematics), and implementation of rigorous experimental and quasi-experimental program evaluations.

C. Application Requirements

To ensure that your application is responsive and therefore sent forward for scientific peer review, you must follow the requirements for the goal that you select for your application (see *Part III Research Goals)* and the sample and content requirements for the Technology topic.

Submission to a specific goal
You must submit your Technology application under one of five research goals:

1) Goal 1: Exploration,
2) Goal 2: Development and Innovation,
3) Goal 3: Efficacy and Replication,
4) Goal 4: Effectiveness, or
5) Goal 5: Measurement.

Focus on children with or at risk for disabilities
This research program is restricted to special education research for students with or at risk for disabilities. Please adhere to the requirements described in *Part I Section B Requirement to Focus on Children with Disabilities*.

Sample requirements

- Research must focus on children with high- or low-incidence disabilities, or at risk for disabilities from infancy through Grade 12. Students without disabilities may be included in the sample (e.g., an inclusive classroom, assessing children's progress relative to peers without disabilities) if appropriate for the research questions.

Content requirements

- Education technology products may be for direct use by children with or at risk for disabilities or by teachers, related services providers, other instructional personnel, or parents who work with these children.

- Applicants must propose education technology that is intended for use in school-based or center-based programs (i.e., programs must be coordinated through the school or district or child care center). However, the delivery of the technology may occur in other settings (e.g., home settings, residential treatment programs).

- Technology products for use with infants, toddlers, and prekindergarten children must address either developmental outcomes pertaining to cognitive, communicative, linguistic, social, emotional, adaptive, functional or physical development, or school readiness outcomes (i.e., reading, pre-reading, pre-writing, early mathematics, early science, or social-emotional skills that prepare young children for school).

- Education technology to enhance *social, emotional, or behavioral* outcomes must be intended to improve those outcomes in ways that will support learning.
- Education technology to enhance *study skills* must target students with or at risk for disabilities at any level from kindergarten through Grade 12.
- Education technology for transition outcomes must target secondary students with disabilities. By secondary students, the Institute means students in middle or high school. Transition outcomes are those basic academic, behavioral, social, communicative, functional and occupational 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).
- Education technology for *professional development* training may be for teachers, related services providers, and other instructional personnel who work with infants, toddlers, young children, or students in kindergarten through grade 12 who have or are at risk for disabilities. Professional development refers to in-service training, tools and other supports, and must be for current

personnel. Pre-service training of prospective teachers, related services providers, or other instructional personnel is not eligible for support under this research program.

- Education technology *assessments* may target reading, pre-reading, writing, pre-writing, mathematics, early mathematics, science, early science, or social behavioral skills for students with or at risk for disabilities from prekindergarten through Grade 12, or study skills for students with or at risk for disabilities from kindergarten through Grade 12. Education technology assessments focused on developing or validating only the use of technology, and not an academic, behavior, or study skills area above are not allowed.
- All applicants must include measures of relevant student outcomes (e.g., reading, mathematics, social skills, achievement test scores, graduation rates, percentage of time spent in the general education environment).

You should contact Dr. Rob Ochsendorf, program officer for the Technology topic at 202-219-2234 or Robert.Ochsendorf@ed.gov to ensure that your project idea is appropriate for the Technology topic and the goal you select.

14. TRANSITION OUTCOMES FOR SECONDARY STUDENTS WITH DISABILITIES

Program Officer: Dr. Amanda Hoffman, (202-208-1177; Amanda.Hoffman@ed.gov)

A. Purpose

Through its research program on Transition Outcomes for Secondary Students with Disabilities (Transition), the Institute supports research that contributes to the improvement of transition outcomes of 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). 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 (NLTS2; Wagner, Newman, Cameto, & Levine, 2006; Newman, Wagner, Cameto, & Knokey, 2009), six to eight times as many students with disabilities than students without disabilities scored more than two standard deviations below the mean (i.e., scores below 70) on measures of academic performance. In addition, a substantial proportion of adolescents experienced social and behavioral problems (e.g., 21 percent reported having been in a physical fight in the past year; 28 percent had been arrested); Individuals with disabilities were also significantly less likely to attend postsecondary education (45 percent) than were individuals without disabilities (53 percent). In addition, about 15 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 and to contribute to our knowledge and theory about the development of students with disabilities as they transition out of secondary education.

Under this topic, the Institute is particularly interested in applications to develop or evaluate interventions intended to improve students' transition from high school to work settings, independent living, or further education and training. For example, you might propose a Development project 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. As another example, you may propose

an Efficacy and Replication project to test the efficacy of a developed intervention aimed at improving high school graduation.

In addition, the Institute invites Measurement applications to develop and validate instruments designed to assess behaviors and skills that are related to successful transitions from school to work, independent living, or further education. For example, you could propose a Measurement project to develop and validate an instrument to assess specific behaviors and functional skills (e.g., social interaction and communication skills, motor skills, and personal living skills) that are predictive of successful transition to employment for students with mild to moderate intellectual disabilities.

In addition to research on transition interventions and measures, the Institute supports Exploration projects to investigate the relations between malleable factors (i.e., variables that can be changed, such as student competencies and education practices) and education outcomes to identify *potential targets of intervention*. For example, you may propose an Exploration project to identify school-based interventions that are associated with enrollment in postsecondary institutions by students with learning disabilities.

C. Application Requirements

To ensure that your application is responsive and therefore sent forward for scientific peer review, you must follow the requirements for the goal that you select for your application (see *Part III Research Goals)* and the sample and content requirements for the Transition topic.

Submission to a specific goal

You must submit your Transition application under one of five research goals:

1) Goal 1: Exploration,
2) Goal 2: Development and Innovation,
3) Goal 3: Efficacy and Replication,
4) Goal 4: Effectiveness, or
5) Goal 5: Measurement.

Focus on children with disabilities

This research program is restricted to special education research for students with disabilities. Applicants proposing to study students at risk for developing disabilities are *not* eligible to submit to the Transition research program. Please adhere to the requirements described in *Part I Section B Requirement to Focus on Children with Disabilities*.

Sample requirements

- Your research must address secondary students with high- or low-incidence disabilities. By secondary students, the Institute means students in middle or high school. This includes students with disabilities who are 18 years or older and are still receiving services under IDEA. Students without disabilities may be included in the sample (e.g., an inclusive classroom, assessing student's progress relative to peers without disabilities) if appropriate for the research questions.

- Your sample may include students with disabilities at the post-secondary level if the purpose is to improve services and interventions provided at the secondary level (e.g., data from recent high school graduates to inform the development of a school-based or community-based transition program for high school students with disabilities).

Content requirements

- Your research must address transition outcomes. By transition outcomes, the Institute means those behavioral, social, communicative, functional, occupational, and basic academic skills that enable youth and young adults with disabilities to obtain and hold meaningful employment, live independently, and obtain further training and education (e.g., college, 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).

- 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.

- You may continue interventions that began in secondary school settings to postsecondary settings as a bridge to improving post school outcomes.

- You must include measures of students' transition outcomes.

You should contact Dr. Amanda Hoffman, program officer for the Transition topic at 202-208-1177 or Amanda.Hoffman@ed.gov to ensure that your project idea is appropriate for the Transition topic and the goal you select.

PART III RESEARCH GOALS

15. APPLYING TO A PARTICULAR RESEARCH GOAL

For the FY 2013 Special Education Research Grants program, you must submit under one of the five research goals: Exploration *or* Development and Innovation *or* Efficacy and Replication *or* Effectiveness *or* Measurement.

The Institute strongly encourages you to contact the relevant program officer listed in *Section 34* if you have questions regarding the appropriateness of a particular project for submission under a specific goal.

A. Requirements for Goal One: Exploration

a. Purpose of Exploration Projects

The Exploration goal is intended to identify (1) malleable factors that are associated with education outcomes for students (student outcomes) and (2) factors and conditions that may mediate or moderate the relations between malleable factors and student outcomes. This identification is to be done through the analysis of data (collected by the project and/or using a secondary data set) or the meta-analysis of research studies. By *malleable factors*, the Institute means factors that can be changed by the education system such as children's skills and behaviors, teachers' practices, education programs and their components, school or district management practices, or education policies.

Projects under the Exploration goal will (a) generate hypotheses regarding the potential causal relations between malleable factors and education outcomes, (b) contribute to theories of change for education interventions, and (c) contribute to the development and identification of potentially beneficial interventions or assessments.

The Institute expects the grantee to provide the following at the *end* of a funded Exploration project:

1) A clear description of the malleable factors and/or the moderators and mediators that were examined including how the factors and/or the moderators and mediators were identified and measured.
2) Evidence regarding the malleable factors' association with student outcomes and/or evidence on whether the factors and conditions moderate and/or mediate the relations between the malleable factors and the student outcomes.
3) A well-specified conceptual framework that provides a theoretical explanation for the link between the malleable factors and the student outcomes, and/or a theoretical explanation for the factors' and conditions' moderation and/or mediation of the relations between the malleable factors and the student outcomes.
4) A determination, based on the empirical evidence and conceptual framework, whether the project's findings could lead to further research under another of the Institute's goals including:
    a. The development or refinement of an intervention under the Development and Innovation goal. The Institute considers "interventions" to encompass curricula, instructional approaches, technology, education practices, programs, and policies. For example, if you found a strong beneficial association between a student behavior and student academic success, you would present your findings in enough detail so that you, another researcher, or a practitioner could use them in the development of an intervention to foster that behavior. Conversely, if you found a weak or even a detrimental association, you would present your results so that they could be used to re-examine or revise existing interventions that have a focus on the behavior.

b. The rigorous evaluation of an intervention under the Efficacy and Replication goal. For example, if you found a strong positive association between an ongoing education program and high school graduation, you would discuss whether your results were strong enough (both statistically and practically) to support a causal evaluation of the program to determine whether it should be disseminated more widely. Alternately, if you found a weak or no association and the program was widely used, you would discuss whether your results justified a causal evaluation of the program to determine whether the intervention was worth continuing.

c. The development of a conceptual framework to be used in the development or revision of an assessment under the Measurement goal. For example, you might be interested in a current classroom observational instrument used to collect the amount of time students spend on specific math activities because there is a known association between the time spent on these activities and student understanding of fractions. If under an Exploration project, you found that the quality of the implementation of the activities was also linked to student understanding of fractions, your results would inform a revision of the classroom instrument.

Malleable factors include both potential targets of interventions (e.g., student behaviors) and existing interventions (e.g., education programs and their components) that are under control of the early intervention system, the education system, and/or parental practices. Under the Exploration goal, the Institute *does not* accept applications to examine malleable factors that cannot be changed or applications to examine malleable factors that are not under the control of the early intervention system, the education system, or parents. In addition, under the Exploration goal, the Institute does not support work to develop an intervention or to test the causal impact of an intervention. If you intend to examine an intervention that is first requires further development, you should apply under the Development and Innovation goal. Similarly, if you intend to bundle existing interventions (or components from different interventions) into a single new intervention and examine that new intervention, you should apply under the Development and Innovation goal. If you intend to determine the causal impact of an intervention, you should apply under the Efficacy and Replication goal.

b. The Project Narrative

In your 25-page project narrative, use the **Significance** section to explain why it is important to study these malleable factors and their potential association with better education outcomes. Use the **Research Plan** section to detail the methodology you will use to explore these associations and mediators and/or moderators of those relationships. Use the **Personnel** section to describe the relevant expertise of your research team and their responsibilities within and time commitments to the project. Use the **Resources** section to describe both your access to institutional resources, schools, and relevant data sources.

(i) Significance

In the Significance section of the project narrative, you must clearly describe your research aims and provide a compelling rationale for the proposed work. In this section, you should:

1) Pose clear aims (hypotheses or research questions) for the research project. You should include a description of the malleable factor(s) and/or mediators and moderators you will be studying and the relationships you expect them to have with specific student outcomes.

2) Present both a theoretical and an empirical rationale for the study. You should include your theory for and evidence that the malleable factor(s) may be associated with beneficial student outcomes or that the mediators and moderators may influence such an association.

    a. For projects examining an existing education intervention (or a major component of an intervention), you must explain why you are proposing an Exploration study rather than a rigorous evaluation of impact under the Efficacy and Replication goal.

3) Explain why it is practically important to study these particular malleable factors and/or mediators and moderators. You should discuss how the results will go beyond what is already known and how the results will be important both to the field of education research, and to education practice and education stakeholders (e.g., practitioners and policymakers). If you are studying an existing intervention, you should discuss:

    a. how widely the intervention is used and

    b. why an Exploration study, in contrast to an Efficacy/Replication evaluation, will have practical importance.

4) Discuss how the results of this work will inform the future development of an intervention or assessment, or the future decision to evaluate an intervention.

It can be helpful to end the Significance section with a summary paragraph justifying the importance of the proposed work. From the reviewers' perspective, such a paragraph organizes the arguments made throughout the Significance section and better prepares them to read the Research Plan.

(ii) Research Plan

In the Research Plan section of the project narrative, you must clearly describe the methodological approach you will use to examine the malleable factor(s) and their association with student outcomes and/or the links between mediators and moderators and this association. A variety of methodological approaches are appropriate under the Exploration goal including, but not limited to the following:

1) Primary data collection with appropriate analyses, or

2) Appropriate secondary data analyses of existing data sets, or

3) Appropriate analysis of a combination of primary and secondary data, or

4) Meta-analyses that go beyond a simple identification of the mean effect of interventions and are designed to determine, for example, the effects of individual interventions within a broad category, variations of a specific intervention or moderators of the intervention's effects, or to identify mediators of the intervention's effects.[5]

In your Research Plan, you should clearly identify the methodological approach you will use and describe your research design, sample, measures, and analysis procedures.

Research Design

You must provide a detailed research design and show how it is appropriate for determining whether the malleable factor(s) are associated with students (student outcomes) and/or whether there are factors and conditions that may mediate or moderate the relations between the malleable factors and student outcomes.

A variety of approaches are appropriate for this work. For example, you could propose an observational study in an authentic education delivery setting (e.g., classrooms and schools) to identify malleable factors that predict student outcomes. Or you could propose an analysis of data from a previous study to identify potential moderators (for example, how the relationship between a predictor and student outcomes varies by student type). You may also propose to conduct small-scale, tightly controlled experimental studies under the Exploration goal to test hypotheses about causal relations between malleable factors and student outcomes. However, experimental or quasi-experimental studies are not appropriate under the Exploration goal if you intend to test the impact of a fully developed intervention on student outcomes. You must apply under Goal 3: Efficacy and Replication if you are interested in determining whether or not fully developed interventions (e.g.,

[5] 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.

education practices, programs, and policies) produce a beneficial impact on student outcomes relative to a counterfactual when they are implemented in authentic education delivery settings.

Sample

You should give thoughtful consideration to the sample that is chosen and its relation to addressing the overall aims of the project (e.g., what population the sample represents).

If you will be collecting primary data, you should define, as completely as possible, the population you will be drawing the sample from, the sample to be selected, and the sampling procedures for the proposed study, including justification for exclusion and inclusion criteria. You should describe strategies to increase the likelihood that participants will remain in the study over the course of the study (i.e., reduce attrition in longitudinal studies). For all quantitative inferential analyses, you should demonstrate that the proposed sample provides sufficient power to address the proposed research questions.

If you will be performing secondary analysis of data, you should provide the information described above for the data sets you will be analyzing. If you intend to link multiple data sets, you should provide sufficient detail for reviewers to be able to judge the feasibility of the linking plan.

If you will be combining primary and secondary data, you should provide the information for both requested above. In addition, you should discuss how you will link the separate sources of data.

If you will be performing a meta-analysis, you should clearly describe 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. You 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 data set to be constructed.

Measures

You should describe the key variables you will be using in the study. For the outcome measures, you should also discuss their validity and reliability for the intended purpose and population, and the response rate or amount of missing data for these measures.

If you are proposing to collect original data, you should carefully describe the data to be collected, the procedures for data collection, and the measures to be developed from the data (including their reliability and validity). If observational data are to be collected, you should describe how the data will be collected (including the procedures for monitoring and maintaining inter-observer reliability) and coded. If the observational data are to be analyzed statistically, then you should also describe the mechanism for quantifying the data.

If you are proposing a meta-analysis, you should clearly define the effect size statistics to be used, along with the associated weighting function, procedures for handling outliers, any adjustments to be applied (e.g., reliability corrections), and the procedures planned for examining and dealing with effect size heterogeneity.

Data Analysis

You must include detailed descriptions of all data analysis procedures. You should provide detailed information on the statistical models to be used and provide a rationale for the choice of models, addressing such issues as how these models best test your hypotheses, how they address the multilevel nature of education data, and how well they control for selection bias. In strong applications, you would also discuss analyses to explore alternative hypotheses. In

addition, you should discuss how you will address exclusion from testing and missing data and conduct sensitivity tests to assess the influence of key procedural or analytic decisions on the results. You should provide separate descriptions for any mediator or moderator analyses. For qualitative data, you should describe the intended approach to data analysis, including any software that will be used.

(iii) Personnel

For your application to be competitive, you will need a research team that collectively demonstrates expertise in the relevant content domain(s), the methodology required, and working with schools or other education agencies as needed.

This section should identify all key personnel on the project team including those from other organizations. You should briefly describe the following for all key personnel:

1) qualifications,
2) roles and responsibilities within the project,
3) percent of time and calendar months per year (academic plus summer) to be devoted to the project, and
4) past success at disseminating research findings in peer-reviewed scientific journals.

If aspects of the proposed project will be conducted by another organization (e.g., measurement development, data collection, data analysis), that organization must be included in the application and the key personnel responsible for that work should be described in this section.

(iv) Resources

You should describe the institutional resources of all the institutions involved in the proposed research that will be used to support your Exploration study. You should discuss the overall management of the research project and what resources and procedures are available to support the successful completion of this project. You should describe your access to the schools (or other education delivery settings) in which the research will take place and to any data sets that you require. In addition, you should include letters of support in Appendix C documenting the participation and cooperation of the schools and/or the organizations holding the data. These letters should convey that the organizations understand what their participation in the study will involve (e.g., annual student and teacher surveys, student assessments, providing specific data sets).

If you have previously received an Exploration award, you should indicate whether your work under that grant has contributed to (a) the development of a new or refinement of an existing intervention, (b) the rigorous evaluation of an intervention, or (c) the development, refinement and/or validation of an assessment. In addition, you should discuss any theoretical contributions made by your previous work. By demonstrating that your previous work has made these contributions, you provide a stronger case for engaging in another Exploration study.

c. Awards

For an Exploration project that solely involves **secondary data analysis or meta-analysis, the maximum duration of an Exploration award is 2 years**. Costs vary according to the data to be analyzed. Your budget should reflect the scope of the work to be done. **The maximum award for an Exploration project solely involving secondary data analysis or meta-analysis is $700,000 (total cost = direct + indirect costs)**.

For an Exploration project that involves **primary data collection, the maximum duration of an Exploration award is 4 years**. Costs vary according to the type of data to be collected. Your budget should therefore reflect the scope of the work to be done. **The maximum award for an Exploration project involving primary data collection is $1,600,000 (total cost = direct + indirect costs)**.

Please note that any application proposing a project length longer than the maximum duration will be deemed nonresponsive to the Request for Applications and will not be accepted for review. Similarly, an application proposing a budget higher than the maximum award will be deemed nonresponsive to the Request for Applications and will not be accepted for review.

B. Requirements for Goal Two: Development and Innovation

a. Purpose of Development and Innovation Projects

The Development and Innovation goal (Development/Innovation) is intended to support innovation in education through the development of new interventions and the further development of existing interventions that are to produce beneficial impacts on education outcomes for students (student outcomes) when implemented in authentic education delivery settings (e.g., classrooms, schools, districts). The Institute considers "interventions" to encompass curricula, instructional approaches, technology, and education practices, programs, and policies.

The Institute expects the grantee to provide the following at the *end* of a funded Development and Innovation project:

1) A fully developed version of the proposed intervention (including all materials and products necessary for implementation of the intervention in authentic education delivery settings) along with:
    - a well-specified theory of change for the intervention and
    - evidence that the intended end users understand and can use the intervention.
2) Data that demonstrate end users can feasibly implement the intervention in an authentic education delivery setting.
3) Pilot data regarding the intervention's promise for generating the intended beneficial student outcomes, along with:
    - a fidelity measure or measures to assess whether the intervention is delivered as it was designed to be by the end users in an authentic education delivery setting, and
    - evidence regarding the fidelity of implementation during the pilot study.

Development/Innovation projects must focus on the development of interventions for use in authentic education delivery settings. Projects that produce pilot data showing the intervention's promise for generating beneficial student outcomes are expected to lead to subsequent applications to test the efficacy of the intervention under the Efficacy and Replication goal. Under Development/Innovation, you may test the efficacy of aspects of your intervention (e.g., viable components) in order to support the development of your intervention. However, the Institute will not accept applications under Development/Innovation that propose only minor development activities followed by substantial tests of the overall intervention's impacts. For example, the Institute would not support an application in which a researcher proposes to spend one year developing the intervention and two years testing the impact of the intervention in a large number of classes or schools. Instead, if you have an intervention that is ready to be tested for efficacy you should apply to the Efficacy and Replication goal.

b. The Project Narrative

In your 25-page project narrative, use the **Significance** section to explain why it is important to develop this intervention. Use the **Research Plan** section to detail the methodology you will use to develop your intervention, document its feasibility, and determine its promise for improving the targeted student outcomes. Use the **Personnel** section to describe the relevant expertise of your research team and their responsibilities within and time commitments to the project. Use the **Resources** section to describe your access to institutional resources, schools, and relevant data sources.

(i) Significance

In the Significance section of the project narrative you should clearly describe the new or existing intervention you intend to develop or revise and provide a compelling rationale for this work. The Significance section should answer three questions: (a) *What is the specific intervention to be developed/revised?*, (b) *Why is this intervention expected to produce better student outcomes than*

current education practice?, and (c) *What is the overall importance of the proposed project?* In answering these questions, you should do the following.

1) Describe the specific issue or problem your work will address including the overall importance of this issue/problem, and how its resolution will contribute to the improvement of student outcomes. The importance of the issue or problem to education stakeholders, such as practitioners and policymakers, should be included in your discussion.

2) Describe current typical practice to address this issue or problem and why current practice is not satisfactory.

3) Describe your proposed intervention, its key components, and how it is to be implemented. Contrast these with current typical practice and its identified shortcomings. Your description of the proposed intervention should show that it has the potential to produce substantially better student outcomes because (a) it is sufficiently different from current practice and does not suffer from the same shortcomings, (b) it has key components that can be justified, using theoretical or empirical reasons, as powerful agents for improving the outcomes of interest, and (c) its implementation appears feasible for teachers, other education personnel, and/or schools given their resource constraints (e.g., time, funds, personnel, schedules).

4) Describe the initial theory of change for your proposed intervention (you may need to revise your theory over the course of the project). The theory of change details the process through which the key components of the intervention are expected to lead to the desired student outcomes. When you clearly describe the theory of change that guides the intervention and its components, reviewers are better able to evaluate (a) the proposed intervention's grounding in its theoretical and empirical foundation, and (b) the relation between the intervention and the outcome measures (i.e., the proposed measures tap the constructs that the intervention is intended to address). For interventions designed to *directly* affect the teaching and learning environment and, thereby, *indirectly* affect student outcomes, you should be clear in your theory of change to identify the proximal outcomes that the intervention is designed to affect (e.g., teacher practices) and how these proximal outcomes are to impact the more distal student outcomes intended to be improved.

5) Describe the theoretical justifications supporting the theory of change (e.g., to show that the proposed intervention is a reasonable operationalization of the theory) and provide empirical evidence supporting the theory of change (e.g., to show that the proposed intervention or its components can be expected to have the intended outcomes).

6) Discuss the expected practical importance of the intervention including how great a contribution it can make to resolving the issue or problem that forms the basis of the project. You could also note the level of resources expected for the implementation of the intervention (e.g., teacher training, classroom time, materials).

7) If you are applying for a Development/Innovation award to further develop an intervention that was the focus of a previous Development/Innovation project or an Efficacy/Replication project you should (a) justify the need for another award, (b) describe the results and outcomes of prior or currently held awards to support the further development of the intervention (e.g., evidence that the intervention in its current form shows promise for improving education outcomes for students), and (c) indicate whether what was developed has been (or is being) evaluated for efficacy and describe any available results from those efficacy evaluations and their implications for the proposed project.

It can be helpful to end the Significance section with a summary paragraph justifying the importance of the proposed work. From the reviewers' perspective, such a paragraph organizes the arguments made throughout the Significance section and better prepares them to read the Research Plan.

(ii) Research Plan

In the Research Plan, you must clearly describe the method for developing the intervention to the point where it can be used by the intended end users (development process), the method for collecting evidence on the feasibility of end users implementing the intervention in an authentic education delivery setting (evidence of feasibility of implementation), and the method for assessing the promise of the intervention for achieving the expected outcomes (pilot study). For each of these, you should describe the sample, setting, and measures and show them to be appropriate for meeting the research aims of the project.

Your measures should address: (a) usability, (b) feasibility, (c) fidelity of implementation, and (d) final student outcomes and expected intermediate outcomes. Usability of the intervention includes whether the intended user is physically able to use the intervention, understands how to use it, and is willing to use it. Feasibility of the intervention shows that the end user can use the intervention within the requirements and constraints of an authentic education delivery setting (e.g., classroom, school, district). There may be overlap between usability and feasibility but the primary distinction between them is that usability addresses the individual abilities of the user while feasibility addresses the supports and constraints of the user's setting. Fidelity of implementation determines if the intervention is being delivered as it was designed to be by the end users in an authentic education delivery setting. The final student outcomes are what are to be changed by the intervention which may be expected to directly affect these outcomes or indirectly affect them through intermediate student or instructional personnel outcomes. You should discuss the procedures for collecting the data that are used in these four types of measures. For student outcome measures and existing fidelity measures, you should also discuss the measures' psychometric properties (e.g., reliability and validity). If you need to develop a measure, you should describe what will be developed, why it is necessary, how it will be developed, and, as appropriate, the process for checking its reliability and validity. As the primary purpose of Development/Innovation projects is the development of interventions, the majority of the project's time and resources should focus on the development process.

The Development Process

In describing the development process, you should make clear (a) what will be developed, (b) how it will be developed to ensure usability, and (d) the chronological order of development.

In the Significance section you described your proposed intervention and its key components. When describing your development process, you should discuss how you will develop the initial version of the intervention. You should then discuss how you will refine and improve upon the initial version of the intervention by implementing it (or components of it), observing its functioning, and making necessary adjustments to ensure usability. You must describe your plan for carrying out such a **systematic, iterative, development process**. This process often includes small-scale studies in which different components of or approaches to using the intervention are tried out in order to obtain feedback useful for revision. The Institute does not require or endorse any specific model of iterative development but recommends that you review models that have been used to develop interventions (e.g., Fuchs & Fuchs, 2001; Diamond & Powell, 2011) in order to identify processes appropriate for your work. Similarly, as there is no preset number of iterations (revise, implement, observe, and revise), you should identify and justify your proposed number of iterations based on the complexity of the intervention and its implementation. The iterative development process should continue until you determine that the intervention can be successfully used by the intended end users. Providing a timeline (either in the Project Narrative or Appendix A) delineating the iterative development process can help the reviewers understand the ordering of the steps in your development process.

Evidence of Feasibility of Implementation

You must discuss how you will collect evidence demonstrating that the intervention can be successfully implemented in an authentic education delivery setting. You can collect this evidence late in the development process, as a separate study, and/or early in the pilot study. Your data collection can be done on a small scale; however, it should be conducted both in the type of setting (e.g., classroom or school) and with the types of users (e.g., principals, teachers, students) for which the intervention is intended.

The Pilot Study

You must provide a detailed plan for a pilot study that will provide evidence of the promise of the intervention for achieving its intended outcomes (including student outcomes) when it is implemented in an authentic education delivery setting. To ensure that Development/Innovation projects focus on the development process, a maximum of 30% of project funds should be used for the pilot study (e.g., its implementation, data collection, and analysis of pilot data).

Because the quality of the pilot study is key to providing the evidence necessary to apply for a grant to test the efficacy of the intervention under Efficacy/Replication, reviewers will evaluate the technical merit of your plan. However, the Institute does not expect the pilot study to be an efficacy study and reviewers are not expected to evaluate your pilot study plan for the same rigor as they would for an Efficacy/Replication project. The only exception to this is that the Institute does allow you to propose an efficacy pilot study if it can be accomplished within the requirements of the Development/Innovation goal. If you propose an efficacy study as your pilot study, the reviewers will apply the methodological requirements under the Efficacy/Replication goal.

The type of pilot study you propose will depend upon the complexity of the intervention, the level at which the intervention is implemented (i.e., student, classroom, school), and the need to stay within the maximum 30% of grant funds that can be used for the pilot study. As a result, pilot studies may range along a continuum of rigor and be

a) efficacy studies (e.g., randomized controlled studies are possible especially when randomization occurs at the student level),
b) underpowered efficacy studies (e.g., randomized controlled studies with a small number of classrooms or schools that provide unbiased effect size estimates of practical consequence which can stand as evidence of promise while not statistically significant),
c) single-case studies that adhere to the criteria for single-case designs that meet the design standards set by the What Works Clearinghouse[6], and
d) quasi-experimental studies based on the use of comparison groups with additional adjustments to address potential differences between groups (i.e., use of pretests, control variables, matching procedures).

Your plan should detail the design of the pilot study, the data to be collected, the analyses to be done, and how you will conclude whether any change in student outcomes is consistent with your underlying theory of change and is large enough to be considered a sign of promise of the intervention's success. You should give careful consideration to the measures of student outcomes used to determine the intervention's promise and consider the inclusion of both those sensitive to the intervention as well as those of practical interest to education practitioners and policymakers. You should make sure to identify the measures to be used for all proximal and distal outcomes identified in your theory of change. In addition, you should discuss how you will develop the fidelity of implementation measures you will use to monitor the implementation of the intervention during the pilot study and your possible responses for increasing fidelity if needed. Although a range of methodological rigor is allowed in the design of pilot studies, the Institute notes the more rigorous the pilot study, the stronger the evidence will be to support a future application for an Efficacy/Replication study of an intervention showing promise.

[6] Kratochwill, T. R., Hitchcock, J., Horner, R. H., Levin, J. R., Odom, S. L., Rindskopf, D. M. & Shadish, W. R. (2010). Single-case designs technical documentation, pp. 14-16. Retrieved from What Works Clearinghouse website: http://ies.ed.gov/ncee/wwc/pdf/wwc_scd.pdf.

(iii) Personnel

For your application to be competitive, you will need a research team that collectively demonstrates expertise in the relevant content domain(s), the methodology required to iteratively develop the proposed intervention and assess its feasibility and promise for changing student outcomes, and working with schools or other education agencies. If you intend to develop measures you should also include personnel with the skills for measurement development and testing.

This section should identify all key personnel on the project team including those from other organizations. You should briefly describe the following for all key personnel:

1) qualifications,
2) roles and responsibilities within the project,
3) percent of time and calendar months per year (academic plus summer) to be devoted to the project, and
4) past success at disseminating research findings in peer-reviewed scientific journals.

Key personnel may be from for-profit entities. However, if these entities are to be involved in the commercial production or distribution of the intervention to be developed, you must include a plan for how their involvement will not jeopardize the objectivity of the research.

(iv) Resources

You should describe the institutional resources of all the institutions involved in the proposed research that will be used to support your Development/Innovation study. You should discuss the overall management of the research project and what resources and procedures are available to support the successful completion of this project. You should describe your access to the schools (or other education delivery settings) in which the research will take place and to any data sets that you require. In addition, you should include letters of support in Appendix C documenting the participation and cooperation of the schools and/or the organizations holding the data. These letters should convey that the organizations understand what their participation in the study will involve (e.g., annual student and teacher surveys, student assessments, providing specific data sets).

If you have previously received an award from any source to develop an intervention and are applying for a grant to develop a new intervention, you should indicate whether the previous intervention has been evaluated for its efficacy (by yourself or another research team) and describe the results, if available. In addition, you should discuss any theoretical contributions made by your previous work. By demonstrating that your previous intervention was successfully developed and is being or has been evaluated, you provide a stronger case for your development of a new intervention (the case is further strengthened if evidence of efficacy was found for your previous intervention).

c. Awards

The development and piloting of an intervention may vary in time due to the complexity of the intervention, the length of its implementation period, and the time expected for its implementation to result in changed student outcomes. Your proposed length of project should reflect these factors. Typical awards last 3 years. If you are proposing to develop a lengthy intervention (e.g., a year-long curriculum) or an intervention that requires a long pilot study because it is expected to take additional time to affect students (e.g., a principal training program that is intended to improve instruction), you can request a 4-year award. **Therefore, the maximum duration of a Development/Innovation project is 4 years.** Development costs vary according to the type of intervention proposed. Your budget should reflect the scope of the work to be done. **The maximum award is $1,500,000 (total cost = direct costs + indirect costs)**.

Under the Development/Innovation goal, no more than 30% of the total funds may be used for the pilot study that is to demonstrate the promise of the intervention for achieving the desired outcomes. You should note the budgeted cost of the pilot study and the percentage of the project's total funding represented by the cost of the pilot study in your budget narrative.

Please note that any application proposing a project length of greater than 4 years will be deemed nonresponsive to the Request for Applications and will not be accepted for review. An application proposing a budget higher than the maximum award will be deemed nonresponsive to the Request for Applications and will not be accepted for review.

C. Requirements for Goal Three: Efficacy and Replication

a. Purpose of Efficacy and Replication Projects

The Efficacy and Replication goal (Efficacy/Replication) is intended to determine whether or not fully developed interventions (e.g., education practices, programs, and policies) produce a beneficial impact on education outcomes for students (student outcomes) relative to a counterfactual when they are implemented under ideal conditions in authentic education delivery settings (e.g., classrooms, schools, districts).

You may apply to conduct **one of three types of studies** under the Efficacy/Replication goal:

1) **Efficacy** - a study that tests an intervention's impacts by determining the degree to which an intervention has a beneficial impact on the student outcomes of interest in comparison to an alternative practice, program, or policy.
2) **Replication** – an efficacy study that tests an intervention, for which there is already evidence of a beneficial impact, under conditions that differ from those of previous efficacy studies.
3) **Efficacy Follow-Up** – an efficacy study that tests an intervention, for which there is already evidence of a beneficial impact, for its longer-term impacts.

Efficacy/Replication projects are to determine if an intervention *can work* to improve student outcomes as opposed to if an intervention *will work* when implemented under conditions of routine practice (as expected in an Effectiveness project). To this end, you may (but are not required to) implement the intervention under what is sometimes called "ideal" conditions that can include more implementation support or more highly trained personnel than would be expected under routine practice. Under "ideal" conditions you may also implement the intervention among a more homogeneous sample of students, teachers, schools, and/or districts than would be typically found in practice.

The Institute expects the grantee to provide the following at the *end* of a funded Efficacy/Replication project:

1) Evidence of the impact of a clearly specified intervention on relevant student outcomes relative to a comparison condition using a research design that meets (with or without reservation) the Institute's What Works Clearinghouse evidence standards (http://ies.ed.gov/ncee/wwc/).
2) Conclusions on and revisions to the theory of change that guides the intervention and a discussion of the broader contributions the study makes to our theoretical understanding of education processes and procedures.
3) If a beneficial impact is found, then the identification of the organizational supports, tools, and procedures that may be needed for sufficient implementation of the core components of the intervention under a future Replication study or Effectiveness study.
4) If a beneficial impact is not found, then a determination of whether and what type of further research would be useful to revise the intervention and/or its implementation under a future Development and Innovation grant.

If the intervention you wish to test is not yet fully developed, you should apply under Development/Innovation to complete it. If you are determining whether to submit to Efficacy/Replication or to Effectiveness, consider whether: (a) you intend to implement the intervention under "ideal" or routine conditions (Effectiveness requires routine conditions), (b) you have evidence of the intervention's efficacy (at least two previous efficacy studies are needed to submit to Effectiveness), and (c) you would be considered an independent evaluator under the Effectiveness criteria.

b. The Project Narrative

In your 25-page project narrative, use the **Significance** section to explain why it is important to test the impact of the intervention under the proposed conditions and sample. Use the **Research Plan** section to detail the evaluation of the intervention. Use the **Personnel** section to describe the relevant expertise of your research team and their responsibilities within and time commitments to the project. Use the **Resources** section to describe your access to institutional resources, schools, and relevant data sources.

(i) Significance

In the Significance section of the project narrative you should clearly describe (a) your research questions, (b) the fully developed intervention, (c) the theory of change for the intervention, and (d) a compelling rationale for testing the impact of the intervention in the proposed manner.

Research Questions

You should clearly describe the aims of your project, including your hypotheses and/or research questions to be addressed.

The Intervention

You should clearly describe the intervention, including its individual components. In addition, you should describe the processes and materials (e.g., manuals, websites, training, coaching) that will be used to support its implementation. You should provide evidence that the intervention is fully developed and that all materials required for its implementation are readily available for use in authentic education delivery settings. Also, you should note the fidelity measure(s) that you will use to assess the implementation of the intervention as well as the means that you will use to determine what the comparison group is receiving. If a fidelity measure or an implementation support (e.g., a website or training manual) needs to be developed, you can propose devoting a short period of time (e.g., 2-6 months) to its development. However, the intervention itself must be fully developed before applying to Efficacy/Replication. If you need additional time to complete the development of intervention, develop a new component, or develop a new delivery approach you should apply under Development/Innovation.

Theory of Change

You should clearly present the theory of change for the intervention by describing how the features or components of the intervention relate to each other and to the intended student outcomes both temporally (operationally) and theoretically (e.g., why A leads to B). When you clearly describe the model that guides the intervention and its individual components, 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?), as well as 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?). For interventions designed to *directly* affect the teaching and learning environment and, thereby, *indirectly* affect student outcomes, you should be clear in your theory of change to identify the proximal outcomes that the intervention is designed to affect (e.g., teacher practices) and how these proximal outcomes are to impact the more distal student outcomes intended to be improved.

Certain widely used interventions (e.g., published curricula) may not be based on a formal theory of change. In such cases, you should articulate a general theory of change for the proposed intervention in which you describe what the intervention is expected to change and how this will ultimately result in improved student outcomes. This theory of change should be specific enough for both guiding the design of the evaluation (e.g., selecting an appropriate sample, measures, comparison condition) and using the results of the study to contribute to our theoretical understanding of education processes and procedures.

Rationale

In justifying your evaluation, you should address why the intervention is likely to produce better student outcomes relative to current practice (or argue that the intervention is current practice if widely used) and the overall practical importance of the intervention (why education practitioners or policymakers should care about the results of the proposed evaluation).

The rationale will vary by the type of project proposed: (a) an efficacy evaluation of an intervention that is currently widely used but has not been rigorously evaluated, (b) an efficacy evaluation of a fully developed intervention that is not currently widely used and has not been rigorously evaluated but has evidence regarding its feasibility of implementation and promise for improving student outcomes (this type of intervention could have been developed during a Development/Innovation project), (c) a replication study, or (d) a follow-up study.

a) Evaluation of a widely used intervention: For the evaluation of an intervention that is already in wide use but has not been rigorously evaluated (e.g., a commercially distributed program, a specific state education policy), you should provide both evidence of its widespread use and conceptual arguments for the importance of evaluating the intervention. Such arguments should consider the intervention's relevance to current education practice and policy as would be judged by practitioners and policymakers. By *widespread use*, the Institute means used across multiple states, in the majority of districts in a single state, or in the majority of schools in two or more large districts. Widespread use of the intervention provides empirical evidence for the practical importance of its evaluation. You should also point out any broader conceptual importance your evaluation may have, for example, if the intervention is the primary approach currently used, or if it is representative of the most commonly used approaches, or, if it offers an alternative approach to the most commonly used approaches. In addition, you should describe any studies that have attempted to evaluate the intervention, note their findings, and discuss why your proposed study would be an important improvement on past work.

b) Evaluation of an intervention not widely used: For interventions not yet widely used or evaluated, your justification will focus more on the intervention's potential (versus current) practical importance, readiness for implementation, feasibility of implementation, and initial evidence of promise for improving student outcomes (as described under Development/Innovation). You should describe and justify the importance of the problem the intervention was developed to address and how the theory of change theoretically supports the intervention's ability to improve this problem. In the Significance section you will have addressed its readiness for implementation by showing that the intervention is fully developed and ready to implement and that you have fidelity of implementation measures. Regarding initial evidence, you should provide empirical evidence on the intervention's feasibility of implementation in an authentic education delivery setting and promise for generating the intended beneficial student outcomes. As discussed under Development/Innovation, evidence of promise can be derived from studies that fall along a continuum of rigor: randomized controlled trials (though these are not a prerequisite for an efficacy study of this type), underpowered randomized controlled studies, single-case experimental designs that adhere to the criteria for meeting the design standards set by the What Works Clearinghouse, and quasi-experimental studies based on the use of comparison groups with additional adjustments to address potential differences between groups (i.e., use of pretests, control variables, matching procedures).

c) Replication Study: For replication studies, you should describe the existing evidence of the intervention's beneficial impact on student outcomes from at least one prior study that would meet the requirements of the Institute's Efficacy/Replication goal. To this end, you should clearly describe the prior efficacy study (or studies), including the sample, the design,

measures, fidelity of implementation of the intervention, analyses, and the results so that reviewers have sufficient information to judge its quality. Also, you should justify why the impact found in the prior study would be considered of practical importance.
Second, you should describe the practical and theoretical importance of carrying out another efficacy study on the intervention. Replication studies are intended to generate evidence that an intervention can work (or to gain information about the limitations of an intervention – where or how it does not work – and what modifications might be needed) under diverse conditions. These diverse conditions may include different populations of students (e.g., differences in socio-economic status, race/ethnicity, prior achievement level), teachers (e.g., specialists vs. generalists), and schools (e.g., those in state improvement programs vs. those not, rural versus urban). In addition, replication studies may also evaluate changes in the composition of the intervention (e.g., use different components, vary the emphases among the components, change the ordering of the components) or the way in which its implementation is supported (e.g., changing the level of support, providing support in alternative ways such as in-person versus online). This type of research can identify ways to increase the impact of the intervention, improve its efficiency, or reduce its cost in comparison to what was done in the prior efficacy study. You should clearly distinguish your study from prior efficacy studies and describe the additional contribution it will make.

d) Follow-up Study: For a follow-up study, you should describe the existing evidence of the intervention's beneficial impact on student outcomes from a previous efficacy study (either completed or ongoing) that would meet the requirements of the Institute's Efficacy and Replication goal. To this end, you should clearly describe the completed or ongoing efficacy study, including the sample, the design, measures, fidelity of implementation of the intervention, analyses, and the results so that reviewers have sufficient information to judge its quality. You should also justify why the impact found would be considered of practical importance. In addition, you must provide evidence that you have access to research participants for successful follow up (e.g., letters of commitment from schools or districts to be included in Appendix C). Also, you should discuss why the original impacts would be expected to continue into the future (this may require revising the theory of change). Follow-up studies take one of two forms and the rationale you provide will differ by whether you intend to follow the students who received the intervention or the education personnel who implemented the intervention.

Following Students: Under this first type of follow-up study, you would follow students who took part in the original study as they enter later grades (or different places) where they do not continue to receive the intervention in order to determine if the beneficial effects are maintained in succeeding time periods (often grades). These studies examine the sustainability of the impacts of the intervention on students after it has ended. Student attrition during the prior study and the ability to follow students into later grades (especially at key transition points that entail moving schools) are key factors in the success of such follow-up studies. You should include a CONSORT flow diagram showing the numbers of participants at each stage of the prior study and discuss expected levels of attrition in the follow-up study, how it will be reduced, and its impact on the interpretation of the results.[7]

Following education personnel: Under the second type of follow-up study, you would determine the impact on a new group of students who are now entering the grade or setting where the intervention took place. These studies examine the sustainability of the

[7] CONSORT, which stands for Consolidated Standards of Reporting Trials, was developed to provide guidance on the tracking and reporting of critical aspects of randomized controlled trials (RCTs). The main initiative of the CONSORT group was the development of a set of recommendations for reporting RCTs, called the CONSORT Statement. The Statement includes a checklist that focuses on study design, analysis, and interpretation of the results, and a flow diagram that provides a structure for tracking participants at each study stage. The Institute encourages researchers to use these tools in their Efficacy/Replication and Effectiveness research projects. The CONSORT Statement can be found at http://www.consort-statement.org/consort-statement/overview0/.

intervention's implementation and impacts after the additional resources provided by the original study are withdrawn. For example, after an intensive third grade teacher professional development program that had beneficial results on student reading comprehension ends, a follow-up study could determine whether the next year's 3rd grade class continued to receive similar benefits from having the trained teachers in comparison to the students having the control teachers. Attrition of the education personnel is a key factor in these follow-up studies, and you should show that enough treatment teachers (or other education personnel) remain to maintain the intervention's fidelity of implementation and that the make-up of the control teachers does not change in a way that would differentially impact student outcomes. In addition, you should discuss how you will determine whether the incoming cohort of students is similar to the one in the original study, whether the treatment and control students are similar enough to compare (e.g., schools or parents aren't selecting specific students to receive the treatment in a manner that could impact the student outcomes), and what you will do should they not be similar in either way.

It can be helpful to end the Significance section with a summary paragraph justifying the importance of the proposed work. From the reviewers' perspective, such a paragraph organizes the arguments made throughout the Significance section and better prepares them to read the Research Plan.

(ii) Research Plan

Your Research Plan must clearly describe: (a) the sample and setting; (b) an appropriate research design that meets WWC evidence standards (with or without reservations); (c) a detailed power analysis; (d) the measures that will be used to assess proximal and distal outcomes, fidelity of implementation, and comparison group practices; (e) key moderators or mediators; and (e) the data analyses.

Sample and Setting

You 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. You should show how this sample addresses the overall aims of the project. Additionally, you should describe strategies to increase the likelihood that participants (e.g., schools, teachers, and/or students) will join the study and remain in the study over the course of the evaluation.

Research Design

You must provide a detailed description of the research design. Efficacy/Replication projects are to provide causal analysis, and you must show how you will be able to make causal inferences based on the results from your design. You should describe how potential threats to internal validity would be addressed. [8] For all types of research designs, including those using random assignment, you should explain how you will document that the intervention and comparison conditions are equivalent at the outset of the study and how you will document the level of bias occurring from overall and differential attrition rates.[9]

In the Significance section, you described the intervention, how it would be implemented, and what supports are expected to be necessary for a successful implementation. In addition to discussing how your Research Design will be used to evaluate the impact of the intervention, you should also address how it identifies and assesses the factors associated with successful implementation of the intervention. You should collect data on the conditions in the school setting that may affect the fidelity of implementation and that can help you to understand why the intervention is or is not implemented with high fidelity. If your proposed efficacy study relies on secondary data analyses of

[8] Applicants may find the following article useful: Song, M., & Herman, R. (2010). Critical issues and common pitfalls in designing and conducting impact studies in education: Lessons learned from the What Works Clearinghouse (Phase I). *Educational Evaluation and Policy Analysis, 32*(3), 351-371.

[9] See pages 11-16 of the WWC Procedures and Standards Handbook: Version 2.1 (September 2011) available at http://ies.ed.gov/ncee/wwc/pdf/reference_resources/wwc_procedures_v2_1_standards_handbook.pdf.

historical data that does not contain this information, you are not required to include this type of analysis or the collection of fidelity data in your application.

In describing your design, you should give a thoughtful justification for the selection of the counterfactual. 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 practical 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*. 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.* For either type of business-as-usual, you should detail as much as possible the treatment or treatments received in the comparison group. When you clearly describe 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, you should describe strategies for reducing potential contamination between treatment and comparison groups. You do not necessarily need to randomize at the school level to avoid contamination between groups especially if you identify conditions and processes that are likely to reduce the likelihood of contamination.

Typical designs for Efficacy/Replication projects include randomized controlled trials, regression discontinuity designs, and strong quasi-experimental designs.

a) Randomized Controlled Trials: 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, you should clearly state and present a convincing rationale for the unit of randomization (e.g., student, classroom, teacher, or school). You should explain the procedures for random assignment of groups (e.g., schools) or participants to intervention and comparison conditions and how the integrity of the assignment process will be ensured.[10]

b) Regression Discontinuity Designs: Studies using regression discontinuity designs may also provide unbiased estimates of the effects of education interventions. If you propose to use a regression discontinuity design you should explain the appropriateness of the assignment variable, show that there is a true discontinuity, document that no manipulation of the assignment variable has occurred and that the composition of the treatment and comparison group does not differ in ways that would indicate selection bias, and include sensitivity analyses to assess the influence of key procedural or analytic decisions on the results.[11]

[10] What a randomized controlled trial must do to meet the WWC's evidence standards is described in the WWC Procedures and Standards Handbook: Version 2.1 (September 2011) available at http://ies.ed.gov/ncee/wwc/pdf/reference_resources/wwc_procedures_v2_1_standards_handbook.pdf.

[11] What a regression discontinuity design must do to meet the WWC standards of evidence is described in the WWC Procedures and Standards Handbook: Version 2.1 (September 2011) available at http://ies.ed.gov/ncee/wwc/pdf/reference_resources/wwc_procedures_v2_1_standards_handbook.pdf.

c) Single-Case Experimental Designs: You may propose a single-case experimental design (e.g., multiple baseline) that meets the design criteria set by the WWC.[12] By single-case experimental designs, the Institute refers to experimental studies involving repeated, systematic measurement of a dependent variable before, during, and after the active manipulation of an independent variable (i.e., intervention) intended to demonstrate a causal relationship between the two variables using a small number of participants or cases. By "case", the Institute is referring to a smaller number of participants or units (e.g., classrooms, schools), and is *not* referring to descriptive case studies. The Institute supports the use of single-case experimental designs as a complementary method to further understand the results of randomized controlled trials in efficacy studies (e.g., determining how manipulation of intervention components may affect outcomes for children who were nonresponsive to the intervention tested in the randomized controlled trial). If you propose a single-case experimental design as the primary means for establishing efficacy see below for *Additional requirements for single-case experimental designs proposed as the primary design for efficacy.*

d) Quasi-Experimental Designs: You may propose a quasi-experimental design (other than a regression discontinuity design) when randomization is not possible. You should justify that the proposed design permits drawing causal conclusions about the effect of the intervention on the intended outcomes. You should discuss how selection bias will be minimized or modeled.[13] To this end, the specific assumptions made by the design should be justified. For example, the covariates used in a propensity score match should be shown capable of explaining selection. Similarly, the instrumental variable used in an instrumental variable analysis should be shown to be strongly correlated with the independent variable and correlated with the outcome through that independent variable (but not directly correlated with the outcome or indirectly correlated with the outcome through unobserved variables). You should explicitly discuss 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. Because quasi-experimental designs can only meet the WWC's standards for evidence *with* reservations, it is important to detail how you will ensure that the study meets these standards (e.g., by establishing equivalence between treatment and comparison groups) to prevent the study from being designated by the WWC as not meeting evidence standards.[14]

Power

You should clearly address the statistical power of the research design to detect a reasonably expected and minimally important effect. You should address the clustering of participants (e.g., students in classrooms and/or schools) in your power analysis. A strong discussion of power will include the following:[15]

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[12] What a single case design must do to meet the WWC's evidence standards is described in the WWC Procedures and Standards Handbook: Version 2.1 (September 2011) available at http://ies.ed.gov/ncee/wwc/pdf/reference_resources/wwc_procedures_v2_1_standards_handbook.pdf.

[13] 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, MA: Houghton Mifflin Company.

[14] What a quasi-experimental designs must do to meet the WWC's evidence standards with reservations is described in the WWC Procedures and Standards Handbook: Version 2.1 (September 2011) available at http://ies.ed.gov/ncee/wwc/pdf/reference_resources/wwc_procedures_v2_1_standards_handbook.pdf.

[15] For more information, see Donner, A., & Klar, N. (2000). *Design and Analysis of Cluster Randomization Trials in Health Research.* New York, NY: Oxford University Press; Murray, D. M., Varnell, S. P., & Blitstein, J. L. (2004). Design and analysis of group-randomized trials: A review of recent methodological developments. *American Journal of Public Health, 94*(3), 423-432; W.T. Grant Foundation & University of Michigan, http://sitemaker.umich.edu/group-based/optimal_design_software.

a) The minimum effect of the intervention you will be able to detect, and a justification as to
   - why this level of effect would be expected from the intervention and
   - why this would be a practically important effect.

b) A description of how either the power for detecting the minimum effect or the minimum detectable effect size was calculated for the sample in answering the primary research questions. You should provide the statistical formula used and also
   - describe the parameters with known values used in the formula (e.g., number of clusters, number of participants within the clusters),
   - describe the parameters whose values are estimated and how those estimates were made (e.g., intraclass correlations, role of covariates)
   - describe other aspects of the design and how they may affect power (e.g., stratified sampling/blocking, repeated observations), and
   - describe predicted attrition and how it was addressed in the power analysis.

c) A similar discussion of the points made in sections a and b above should be provided for any causal analyses to be done using subgroups of the proposed sample.

Measures

You should give careful consideration to the selection of measures and justify the appropriateness of the chosen measures concerning: (a) outcomes, (b) fidelity of implementation of the intervention, and (c) what the comparison group receives.
You should provide information on the reliability and validity of your measures. The Institute recognizes that there may be a need for some measurement development to be conducted in Efficacy/Replication projects (e.g., measures closely aligned to the treatment, fidelity of implementation measures). In such cases, you should detail how those measures will be developed and validated.

You should describe the procedures for and the timing of the collection of data that will be used as measures and indicate procedures to guard against bias entering into the data collection process (e.g., pretests occurring after the intervention has been implemented or differential timing of assessments for treatment and control groups).

a) Outcomes: You should include student outcome measures that will be sensitive to the change in performance that the intervention is intended to bring about (e.g., researcher developed measures that are aligned with the experiences of the treatment group), outcome measures that are not strictly aligned with the intervention and are, therefore, fair to the control group, and measures of student outcomes that are of practical interest to educators. For example, applications to evaluate interventions to improve academic outcomes should include measures such as grades, standardized measures of student achievement, or state end-of-course exams. Applications to evaluate interventions designed 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. For interventions designed to directly change the teaching and learning environment and, in doing so, indirectly affect student outcomes, you must provide measures of student outcomes, as well as measures of the proximal outcomes (e.g., teacher or leader behaviors) that are hypothesized to be directly linked to the intervention.

b) Measures of Implementation Fidelity: You should specify how the implementation of the intervention will be documented and measured. This will include describing your fidelity measure(s) to assess the implementation of the intervention. You should make clear how the

fidelity measures capture the core components of the intervention. Your description of the fidelity measures and the measures of what is occurring in the comparison group (see below) should show that the two sets of measures are sufficiently comprehensive and sensitive to identify and document critical differences between what the intervention and comparison groups receive. You should also discuss how you will identify and assess factors associated with the fidelity of implementation; such information may provide insight into what supports are needed within schools or districts to successfully implement the intervention with high fidelity.

c) Measures of Comparison Group Practices: Comparisons of interventions against other conditions are only meaningful to the extent that you describe what the comparison group receives or experiences. You should identify the measure(s) you will use to measure the comparison group's experience so that you can compare intervention and comparison groups on the implementation of critical features of the intervention. Such a comparison will allow you to determine whether there was clear distinction in what the groups received or whether both groups received key elements of the intervention. You can then use this determination for *post hoc* explanations of why the intervention does or does not improve student learning relative to the counterfactual.

Moderators and Mediators

The Institute expects Efficacy/Replication studies to examine relevant moderating factors but recognizes that many efficacy studies are not powered to rigorously test the effects of a wide-range of moderators. Therefore, you should focus on a small set of moderators for which there is a strong theoretical and/or empirical base to expect they will moderate the impact of the intervention on the student outcomes measured. Moderating variables that are also likely to affect outcomes in the comparison condition should be measured in both the treatment and the comparison groups. The Institute encourages your use of observational, survey, and qualitative methodologies to assist in the identification of factors that may explain the variation in the effect of the intervention. The Institute also encourages you to consider the use of single-case experimental designs as a complement to randomized controlled trials to understand factors or variables that affect the response to the intervention (e.g., to manipulate components of an intervention to determine which are most important to responsiveness).

The Institute recognizes that most Efficacy/Replication studies are not designed or powered to rigorously test the effects of specific mediating variables. However, the Institute encourages you to propose exploratory analyses to better understand potential mediators of the intervention.

Data Analysis

You must include a detailed description of your data analysis procedures. You should make clear how the data analysis directly answers your research questions/hypotheses. You should include your data analysis plans for evaluating the impact of the intervention and for additional analyses such as subgroup impacts, the roles of moderators and mediators, and fidelity of implementation (including identifying what is needed for sufficient implementation of the intervention). For quantitative data, specific statistical procedures, including the equations for the models to be estimated, should be described. Your analysis procedures should address any clustering of students in classes and schools, even when individuals are randomly assigned to condition, which generally requires specialized multilevel statistical analyses. In addition, you should discuss how exclusion from testing and missing data will be handled in your analysis. Also, if you intend to link multiple data sets, you should provide sufficient detail for reviewers to judge the feasibility of the linking plan.

For qualitative data, you should delineate the specific methods used to index, summarize, and interpret the data. You should show how the qualitative data will be used in the quantitative analysis

(e.g., incorporating fidelity of intervention data into the impact analysis[16]) and/or how the qualitative analyses will complement and help explain the findings from the quantitative analysis.

Additional Requirements for Single-Case Experimental Designs Proposed as the Primary Design for Efficacy Studies

If you propose a single-case experimental design as the primary means for establishing efficacy you must provide a strong argument supporting the use of the design as compared to a randomized controlled trial (e.g., focusing on a low incidence condition). Your proposed study must meet two sets of criteria as described in the WWC Procedures and Standards Handbook (referenced above) regarding:

(1) the design and analysis of individual single-case studies that meet WWC evidence standards or meet evidence standards with reservations, and
(2) the set of single-case studies required to provide evidence of the efficacy of an intervention.

For the design and analysis requirement, proposed studies must meet the requirements for interventions listed above in *Section 15.C.b.i Significance*, *Section 15.D.b.ii Research Plan*. The exception to this requirement is the Power Analysis described above. Additionally, the Institute encourages you to consider strengthening the internal validity of single-case experimental designs through the inclusion of randomization procedures (e.g., Kratochwill, & Levin, 2010; Koehler & Levin, 1998; Levin & Wampold, 1999) and to include outcome measures that are not strictly aligned with the intervention.

For the set of studies requirement, you should propose a minimum of five single-case experimental design studies examining the intervention, to be conducted by three research teams at three different sites, with the combined total of at least 20 cases (e.g., individual participants, classrooms) across the three sites.

(iii) Personnel

For your application to be competitive, you will need a research team that collectively demonstrates expertise in the relevant content domain(s), the implementation of the intervention if that is part of the project, the methodology required to test the impact of the intervention, and working with schools or other education agencies.

This section should identify all key personnel on the project team including those from other organizations. You should briefly describe the following for all key personnel:

1) qualifications,
2) roles and responsibilities within the project,
3) percent of time and calendar months per year (academic plus summer) to be devoted to the project, and
4) past success at disseminating research findings in peer-reviewed scientific journals.

If any part of the study is to be conducted by another organization (e.g., development of measures, data collection, analysis of data), that organization and their personnel involved must be included in the application. It is not acceptable to simply propose that grant funds be used to contract with an unspecified organization to develop, collect, and/or analyze measures or data.

Key personnel may be from for-profit entities. However, if these entities are to be involved in the commercial production or distribution of the intervention to be developed, you must include a plan for how their involvement will not jeopardize the objectivity of the research.

[16] See, e.g., Hulleman, C. S., & Cordray, D. S. (2009). Moving from the lab to the field: The role of fidelity and achieved relative intervention strength. *Journal of Research on Educational Effectiveness, 2*, 88-110.

The Institute allows a researcher who has been involved in the development of an intervention to be the Principal Investigator of an Efficacy/Replication project to evaluate that intervention provided that reasonable safeguards are in place to ensure the objectivity and integrity of the evaluation. If you are both the Principal Investigator and a developer of the intervention to be evaluated, you should describe the steps you will take to avoid any appearance of conflict of interest. The Institute recommends the following steps be taken:

- The assignment of units to condition is conducted by individuals independent of the developer. For example, the person who writes the program to generate random numbers and assigns units (e.g., teachers, schools) to condition is separate from the developer/distributor of the intervention.

- The collection and coding of outcome data are under the supervision of someone other than those who were or are involved in the development or distribution of the intervention.

- The data analysis is conducted by individuals who are not involved with the development or distribution of the intervention and who have no financial interest in the outcome of the evaluation.

(iv) Resources

You should describe the institutional resources of all the institutions involved in the proposed research that will be used to support your Efficacy and Replication study. You should discuss the overall management of the research project and what resources and procedures are available to support the successful completion of this project. You should describe your access to the schools (or other education delivery settings) in which the research will take place and to any data sets that you require. In addition, you should include letters of support in Appendix C documenting the participation and cooperation of the schools and/or the organizations holding the data. These letters should convey that the organizations understand what their participation in the study will involve (e.g., annual student and teacher surveys, implementing all components of the intervention if placed into the treatment group, not receiving the intervention for X-number of years if placed on a wait-list control, providing specific data sets).

c. Awards

Efficacy and Replication Projects

Your proposed length of project should reflect the scope of work to be accomplished. **The maximum duration of an Efficacy project or a Replication project is 4 years**. Your budget should reflect the scope of the work to be done and will vary according to the type of intervention being evaluated. **The maximum award for an Efficacy/Replication project is $3,500,000 (total costs = direct + indirect costs).**

Efficacy Follow-Up Projects

The maximum duration for an Efficacy Follow-Up project is 3 years. Your budget should reflect the scope of the work to be done and will vary according to the type of follow-up assessments being collected. **The maximum award for Efficacy Follow-Up project is $1,200,000 (total costs = direct + indirect costs).**

Please note that any application proposing a project length longer than the maximum duration will be deemed nonresponsive to the Request for Applications and will not be accepted for review. Similarly, an application proposing a budget higher than the maximum award will be deemed nonresponsive to the Request for Applications and will not be accepted for review.

D. Requirements for Goal Four: Effectiveness

a. Purpose of Effectiveness Projects

The Effectiveness goal is intended to determine whether or not fully developed interventions (e.g., practices, programs, and policies) with prior evidence of efficacy produce a beneficial impact on education outcomes for students (student outcomes) relative to a counterfactual when they are **implemented under routine practice** in authentic education delivery settings (e.g., classrooms, schools, districts). The individuals involved in the evaluation must be individuals who did not and do not participate in the development or distribution of the intervention.

Effectiveness projects are to determine if an intervention to improve student outcomes *will work* when implemented under conditions of routine practice as opposed to whether it *can work* under "ideal" conditions (as expected in an Efficacy/Replication project). To this end, you must implement the intervention under what would be considered routine practice that is similar to how the user (e.g., student, teacher, school, district) would implement the intervention on their own and outside of a research study. Routine practice would not include the extra implementation support, involvement of more highly trained personnel, or focus on a homogeneous sample that are allowed under Efficacy/Replication.

Under the Effectiveness goal, you may also apply for an Effectiveness Follow-Up project whose purpose is to follow students after they have participated in an Effectiveness study that found beneficial impacts of the intervention to determine if those impacts continue over time.

The Institute expects the grantee to provide the following at the *end* of a funded Effectiveness project:

1) Evidence of the impact of a clearly specified intervention implemented under routine conditions on relevant student outcomes relative to a comparison condition using a research design that meets (with or without reservation) the Institute's What Works Clearinghouse evidence standards (http://ies.ed.gov/ncee/wwc/).
2) Conclusions on and revisions to the theory of change that guides the intervention and a discussion of the broader contributions the study makes to our theoretical understanding of education processes and procedures.
3) If a beneficial impact is found, then the identification of the organizational supports, tools, and procedures that are needed for sufficient implementation of the core components of the intervention under routine practice.
4) If a beneficial impact is not found, then an examination of why the findings differed from those of the previous efficacy studies on the intervention and a determination of whether and what type of further research would be useful to revise the intervention and/or its implementation.

If you are determining whether to submit to Efficacy/Replication or to Effectiveness, consider whether: (a) you intend to implement the intervention under "ideal" or routine conditions (Effectiveness requires routine conditions), (b) you have evidence of the intervention's efficacy (evidence from at least two previous efficacy studies are needed to submit to Effectiveness), and (c) you would be considered an independent evaluator under the Effectiveness criteria (see Personnel).

If an intervention has undergone an Effectiveness study, you may apply to do an additional Effectiveness study if the routine conditions under which you proposed to implement the intervention differ from those of the prior study. For example, if an intervention has been evaluated for its effectiveness in urban schools, the routine conditions in rural schools arguably are different enough to justify a second Effectiveness study. Similar arguments can be made for other populations or for changes in the routine implementation of the intervention (e.g., if the intervention's in-person coaching model switched to an

on-line model). In such cases, you should show how an additional Effectiveness study will contribute to evidence for the generalizability of the intervention's impact and should cite the evidence from the previous Effectiveness study in support of the proposed one.

b. The Project Narrative

In your 25-page project narrative, use the **Significance** section to explain why it is important to evaluate this intervention under conditions of routine implementation and to describe the evidence of the intervention's beneficial impacts on student outcomes from at least two separate studies that meet the requirements of the Institute's Efficacy/Replication goal. Use the **Research Plan** section to detail the evaluation of the intervention. Use the **Personnel** section to describe the relevant expertise of your research team, their responsibilities within and time commitments to the project, and the independence of the evaluators from the developers/distributors of the intervention. Use the **Resources** section to describe your access to institutional resources, schools, and relevant data sources.

(i) Significance

In the Significance section of the project narrative you should clearly describe (a) your research aims, (b) the fully developed intervention, (c) the theory of change for the intervention, (d) strong evidence of the intervention's impact from at least two prior efficacy studies, (e) implementation under routine practice, and (f) a compelling rationale for testing the impact of the intervention in the proposed manner.

Research Questions

You should clearly describe the aims of your project, including your hypotheses and/or research questions to be addressed.

The Intervention

You should clearly describe the intervention, including its individual components. In addition, you should describe the processes and materials (e.g., manuals, websites, training, coaching) that will be used to support its implementation. You should provide evidence that the intervention is fully developed and that all materials required for its implementation are readily available for use in authentic education delivery settings.

Also, you should describe the fidelity measure(s) that you will use to assess the implementation of the intervention as well as the measures you will use to determine what the comparison group is receiving.

Because implementation is to take place under routine conditions, the intervention users (e.g., students, teachers, schools, districts) are to directly monitor and adjust their fidelity of implementation rather than rely upon the evaluation team's monitoring of fidelity. Therefore, you should also describe any tools or procedures that will be provided to the intervention users to enable them to achieve, monitor, and maintain adequate fidelity of implementation of the intervention under conditions of routine practice (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).

Theory of Change

You should clearly present the theory of change for the intervention by describing how the features or components of the intervention relate to each other and to the intended student outcomes both temporally (operationally) and theoretically (e.g., why A leads to B). When you clearly describe the model that guides the intervention and its individual components, 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?), as well as 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?). For interventions designed to *directly* affect the teaching and learning environment and, thereby, *indirectly* affect student outcomes, you should

be clear in your theory of change to identify the proximal outcomes that the intervention is designed to affect (e.g., teacher practices) and how these proximal outcomes are to impact the more distal student outcomes intended to be improved.

Strong Evidence of Educationally Meaningful Effects

You should provide strong evidence of the efficacy of the intervention to justify your application to conduct an Effectiveness study. Specifically, you must describe the results of two or more rigorously conducted evaluations that would meet the criteria of Efficacy/Replication studies (e.g., a research design that meets WWC evidence standards with or without reservations). As noted under the Efficacy/Replication goal, such studies may have taken place under "ideal" conditions (i.e., with more implementation support or more highly trained personnel than would be expected under routine practice, or with a homogeneous sample). To enable reviewers to judge the quality of the efficacy studies, you should clearly describe the conditions under which the intervention was implemented, the research design and methodology of the efficacy studies, and the results of the studies. When discussing the results you should describe the size and statistical significance of the effects that were found and indicate (e.g., including the statistical formula) how any reported effect sizes were calculated. In addition, you should discuss how the results show a practically important impact on student outcomes large enough to justify an Effectiveness study.

For an Effectiveness Follow-Up study, you should describe the existing evidence of the intervention's beneficial impact on student outcomes from the previous study (either completed or ongoing) that would meet the requirements of the Institute's Effectiveness goal. To this end, you should clearly describe the prior study, including the sample, the design, measures, fidelity of implementation of the intervention, analyses, and the results so that reviewers have sufficient information to judge its quality. You should also justify why the impact found would be considered of practical importance. In addition, you must provide evidence that you have access to research participants for successful follow up (e.g., letters of commitment from schools or districts to be included in Appendix C). In your Follow-Up study, you will be following students who took part in the original study as they enter later grades (or different places) where they do not continue to receive the intervention in order to determine if the beneficial effects are maintained in succeeding time periods. Student attrition during the prior study and the ability to follow students into later grades (especially at key transition points that entail moving schools) are key factors in the success of such follow-up studies. You should include a CONSORT flow diagram showing the numbers of participants at each stage of the prior study and discuss expected levels of attrition in the follow-up study, how it will be reduced, and its impact on the interpretation of the results.[17]

Routine Practice

Effectiveness studies are to determine if interventions are effective when the developers/distributors of the program do not provide any more support than would be available under routine practice. Therefore, the intervention should be implemented in schools and districts as it would be if a school and/or district had chosen to use the intervention on its own apart from its participation in a research and evaluation study (e.g., with only the implementation support that would normally be provided by the developer or distributor).

You should clearly describe the routine conditions under which the evaluation will take place. Also, you should describe in detail the routine practices through which the intervention will be implemented, making clear that they would be the same as for any school or district intending to use

[17] CONSORT, which stands for Consolidated Standards of Reporting Trials, was developed to provide guidance on the tracking and reporting of critical aspects of randomized controlled trials (RCTs). The main initiative of the CONSORT group was the development of a set of recommendations for reporting RCTs, called the CONSORT Statement. The Statement includes a checklist that focuses on study design, analysis, and interpretation of the results, and a flow diagram that provides a structure for tracking participants at each study stage. IES encourages researchers to use these tools in their Efficacy/Replication and Efficacy study research projects. The CONSORT Statement can be found at http://www.consort-statement.org/consort-statement/overview0/.

the intervention. You should contrast these implementation supports to those used under the previous efficacy evaluations of the intervention. In this way, you will identify any implementation differences between the previous efficacy evaluations and this effectiveness evaluation (i.e., any differences between "ideal implementation" and "routine practice").

Rationale

In justifying your study, you should address why the intervention is likely to produce better student outcomes relative to current practice when implemented under routine practice. Your justification should show that a combination of theory of change and evidence from the previous evaluations of the intervention lead to the expectations of a successful implementation of the intervention and a beneficial impact on students under the routine conditions of implementation.

In addition, you should address the overall practical importance of the intervention (why education practitioners or policymakers should care about the results of the proposed evaluation).

For Effectiveness Follow-Up studies, you should also discuss why those students who received the intervention would be expected to continue having beneficial impacts in future grades when they no longer receive it (this may require revising the theory of change).

It can be helpful to end the Significance section with a summary paragraph justifying the importance of the proposed work. From the reviewers' perspective, such a paragraph organizes the arguments made throughout the Significance section and better prepares them to read the Research Plan.

(ii) Research Plan

The requirements for your Research Plan are the same as those for Efficacy/Replication with three exceptions:

a) Under Efficacy/Replication a purposefully homogeneous sample could be selected. Under Effectiveness, selection of a more heterogeneous sample of the type that would be found under routine use of the intervention is expected. The sample does not need to be generalizable across a state, region, or the nation but it is expected to be generalizable within the target of the intervention and the scope of the Effectiveness study. For example, a study of an intervention to support low-performing schools within a large urban district would be expected to select its sample from all low-performing schools in the district not only those schools most likely to successfully implement the intervention.

b) As noted under the Significance section, the users of the intervention are to self-monitor and improve the fidelity of implementation of the intervention as they would be expected to if there was no ongoing research study. You should discuss how the research team will evaluate the success of this self-monitoring and adjustment of fidelity of implementation, and how the team will identify ways to improve fidelity if needed.

c) A Cost-Feasibility analysis must be included. This analysis is to assess the financial costs of program implementation and assist schools in understanding whether implementation of the program is practicable given their available resources. You should collect data 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 you to conduct an economic evaluation of the program (e.g., cost-benefit, cost-utility, or cost-effectiveness analyses), although you may propose such evaluation activities if desired.[18]

[18] 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.

(iii) Personnel

For your application to be competitive, you will need a research team that collectively demonstrates expertise in the relevant content domain(s), the implementation of the intervention if that is part of the project (e.g., if the developer is providing routine implementation support within the project), the methodology required to test the impact of the intervention, and experience working with schools or other education agencies.

If any part of the study is to be conducted by another organization (e.g., development of measures, data collection, analysis of data), that organization and their personnel involved must be included in the application. It is not acceptable to simply propose that grant funds be used to contract with an unspecified organization to develop, collect, and/or analyze measures or data.

This section should identify all key personnel on the project team including those from other organizations. You should briefly describe the following for all key personnel:

1) qualifications,
2) roles and responsibilities within the project,
3) percent of time and calendar months per year (academic plus summer) to be devoted to the project, and
4) past success at disseminating research findings in peer-reviewed scientific journals.

Effectiveness studies require the design and conduct of the evaluation to be independent from the developer/distributor of the intervention. The individuals involved in the design of the evaluation, the determination of random assignment, the data collection, and analysis of data must be individuals who did not and do not participate in the development or distribution of the intervention. You as the Principal Investigator must be an individual who has not been involved in the development or distribution of the intervention. The evaluation team must have no financial interest in the outcomes of the evaluation.

These requirements do not preclude the developer or distributor from having some role in the evaluation. For example, an intervention may routinely require a teacher professional development course or a train-the-trainers course provided by the developer/distributor. These may be provided in their routine manner (i.e., with nothing more than the routine training provided). However, involvement of the developer or distributor must not jeopardize the objectivity or independence of the evaluation. You should carefully describe the role, if any, of the developer/distributor in the intervention.

You should describe how objectivity in the evaluation would be maintained and declare any potential conflicts of interest (e.g., close professional or personal relationships with the developer/distributor) that members of the evaluation team may have.

(iv) Resources

You should describe the institutional resources of all the institutions involved in the proposed research that will be used to support your Effectiveness study. You should describe your access to the schools (or other education delivery settings) in which the research will take place and to any data sets that you require. In addition, you should include letters of support in Appendix C documenting the participation and cooperation of the schools and/or the organizations holding the data. These letters should convey that the organizations understand what their participation in the evaluation will involve (e.g., annual student and teacher surveys, implementing all components of the intervention if placed into the treatment group, not receiving the intervention for X-number of years if placed on a wait-list control, providing specific data sets).

c. Data Sharing Plan

If you are applying under the Effectiveness goal, you must include a plan for data sharing. The Data Sharing Plan (DSP) should address the data to be generated by the research, how the data will be

managed, how confidentiality of private information will be ensured, and how the data will be shared with others. Your DSP should be a maximum of 5 pages long and placed in Appendix D.

Background

The Institute released a policy statement on data sharing in June 2011 (http://ies.ed.gov/funding/datasharing.asp), expressing its commitment to advancing education research through the sharing of scientific data collected through its grant-funded research programs. The Institute then published a Data Sharing Implementation Guide in September 2011 (http://ies.ed.gov/funding/datasharing_implementation.asp) to describe how the policy will be implemented and to provide guidance to grant applicants. You should review these documents to familiarize yourself with the intent of the policy and the specific implementation requirements.

Data Sharing Plan

Your DSP should address the requirements as set forth in the policy statement and Implementation Guide including a comprehensive overview of how the final research data will be shared. DSPs are expected to differ, depending on the nature of the project and the data collected. However, you should address the following in the DSP:

- Type of data to be shared;
- Procedures for managing and for maintaining the confidentiality of the data to be shared;
- Roles and responsibilities of project or institutional staff in the management and retention of research data (this section should include the procedure should the Principal Investigator and/or the Co-Principal Investigator leave the project or their institution);
- Expected schedule for data sharing;
- Format of the final dataset;
- Documentation to be provided;
- Method of data sharing (e.g., provided by the Principal Investigator, through a data archive);
- Whether or not a data sharing agreement that specifies conditions under which the data will be shared is required; and
- Any circumstances which prevent all or some of the data from being shared. This includes data that may fall under multiple statutes and hence must meet the confidentiality requirements for each applicable statute (e.g., data covered by Common Rule for Protection of Human Subjects, FERPA and HIPAA).

Inclusion of Data Sharing in Other Sections of Your Application.

In the Personnel section of the Project Narrative, you should identify which personnel will be responsible for implementing the DSP. In the budget and budget justification sections of the application, you should include and describe the costs of data sharing. Costs can include those associated with preparing the data set and documentation, and storing the data. Costs related to the use of data archives or data enclaves should specifically note the activities associated with the costs (e.g., training on the use of the data). For the Human Subjects section of the application, you should discuss the potential risks to research participants posed by data sharing and steps taken to address those risks.

Review of Data Sharing Plan.

The peer review process will not include the DSP in the scoring of the scientific merit of the application. The Institute's Program Officers will be responsible for reviewing the completeness of the proposed DSP. If your application is being considered for funding based on the scores received during the peer review process but your DSP is determined incomplete, you will have to complete your DSP before an award will be made. Once an award is made, the Institute's program officers will be responsible for monitoring the DSP over the course of the grant period.

d. Awards

Effectiveness Projects

Your proposed length of project should reflect the scope of work to be accomplished. **The maximum duration of an Effectiveness project is 5 years**. Your budget should reflect the scope of the work to be done and will vary according to the type of intervention being evaluated. **The maximum award for an Effectiveness project is $5,000,000 (total costs = direct + indirect costs).**

Under the Effectiveness goal, no more than 25% of the award may be allocated to the cost of the intervention. The cost of the intervention includes any materials, textbooks, software, computers, or training required to implement the intervention. When calculating the cost of the intervention you should not include salaries for school or district staff who implement the intervention as part of their regular duties or funds allocated to pay teachers or other participants for time involved in completing questionnaires, surveys, or any other assessments that are part of the evaluation. You should note the budgeted cost of the intervention and the percentage of the project's total funding represented by the cost of the intervention in your budget narrative.

Effectiveness Follow-Up Projects

Your proposed length of project should reflect the scope of work to be accomplished. **The maximum duration for an Effectiveness Follow-Up project is 3 years**. Your budget should reflect the scope of the work to be done and will vary according to the type of follow-up assessments being collected. **The maximum award for an Effectiveness Follow-Up project is $1,500,000 (total costs = direct + indirect costs).**

Please note that any application proposing a project length longer than the maximum duration will be deemed nonresponsive to the Request for Applications and will not be accepted for review. Similarly, an application proposing a budget higher than the maximum award will be deemed nonresponsive to the Request for Applications and will not be accepted for review.

E. Requirements for Goal Five: Measurement

a. Purpose of Measurement Projects

The Measurement goal is intended to support (1) the development of new assessments or refinement of existing assessments (develop/refine) and the validation of these assessments or (2) the validation of existing assessments for specific purposes, contexts, and populations. Under *refinement*, the Institute includes changing existing assessments or changing the delivery of existing assessments in order to increase efficiency, improve measurement, improve accessibility, or provide accommodation for test takers. Proposed assessments must meet the specific content and sample requirements detailed under the research topic to which the application is submitted.

The Institute expects the grantee to provide the following at the *end* of a funded Measurement project to **develop/refine and validate an assessment**:

1) A detailed description of the assessment and its intended use.
2) A detailed description of the iterative development processes used to develop or refine the assessment, including field testing procedures and processes for item revision.
3) A well-specified conceptual framework that provides the theoretical basis for the assessment and its validation activities.
4) A detailed description of the validation activities.
5) Evidence on the reliability and validity of the assessment for the specified purpose(s), populations, and contexts.

The Institute expects the grantee to provide the following at the *end* of a funded Measurement project to **validate an existing assessment**:

1) A well-specified conceptual framework that provides the theoretical basis for the assessment and its validation activities.
2) A detailed description of the validation activities.
3) Evidence on the reliability and validity of the assessment for the specified purpose(s), populations, and contexts.

The Institute supports research on assessments intended to assess students (e.g., for screening, progress monitoring, formative assessment, outcome assessment), education professionals (e.g., credentialing or evaluation of teachers, principals, and related services providers), and education systems (e.g., accountability standards).

All assessments developed and/or validated must be either directly or indirectly related to measures of student academic outcomes. Applicants proposing research on measures of constructs that support student academic learning (e.g., motivation) must describe a theoretical rationale and validation activities that relate the construct to student academic outcomes. Applicants proposing research on assessments of education professionals or education systems must relate the assessments to measures of student academic outcomes (e.g., a measure of a specific teacher instructional practice must also show that the instructional technique is related to an improved student academic outcome).

Applications to the Measurement goal are for research in which the primary focus is on assessment development and/or validation. Applications for other types of research on assessment may fit better under other research goals. If you need additional information before you can fully develop the conceptual framework that will provide the theoretical basis for your assessment development and validation, you should first apply to obtain this information under the Exploration goal. For example, if you wanted to create a new assessment of teacher competencies for which there is not an established theoretical or empirical basis you could first apply to Exploration to identify the actual competencies linked to the student outcomes then apply to Measurement to develop and validate an assessment of

those competencies. Applications that focus on developing an intervention but also include assessment development in support of the intervention (e.g., development of fidelity instruments or of an outcome measure that is closely aligned with the intervention) must be submitted to Development/Innovation. Applications to rigorously test whether or not the use of an already developed assessment impacts student outcomes (e.g., exit exams, formative assessments) must be submitted to Efficacy/Replication or Effectiveness.

b. The Project Narrative

In your 25-page project narrative, use the **Significance** section to explain why it is important to develop/refine and/or validate the assessment for the stated use. Use the **Research Plan** section to detail the methodology you will use to develop/refine and/or validate the assessment. Use the **Personnel** section to describe the relevant expertise of your research team and their responsibilities within and time commitments to the project. Use the **Resources** section to describe both your access to institutional resources, schools, and relevant data sources and your past work supported by the Institute's grants. You are encouraged to refer to the most recent edition of *Standards for Educational and Psychological Testing*[19] for best practices in assessment development and validation.

(i) Significance

In the Significance section you should clearly describe the goals and end products of your project, the theoretical and empirical rationale for the assessment being studied or developed, and a compelling rationale justifying the importance of the proposed research.

In presenting the significance of your project **to develop/refine and validate an assessment**, you should do the following.

1) Describe the specific need for developing and validating a new assessment or refining and validating an existing assessment. Discuss how the results of this work will be important both to the field of education research, and to education practice and education stakeholders (e.g., practitioners and policymakers).
2) Describe any current assessments that address this need and why they are not satisfactory.
3) Describe your proposed assessment, its key components, and how it is to be used. Contrast these with current typical assessment practice and its identified shortcomings. A detailed description of the assessment will clearly show that it has the potential to provide a better measure of the intended construct(s) because (a) it is sufficiently different from current assessments practice and does not suffer from the same shortcomings, (b) it has a strong theoretical or empirical basis, and (c) its implementation appears feasible for researchers, teachers and schools given their resource constraints (e.g., time, funds, personnel, schedules).
4) Describe the **conceptual framework**. The conceptual framework describes how the construct(s) to be measured is/are represented in relationship to relevant theory and the evidence that will be collected to support adequate representation of the construct(s). The conceptual framework provides operational definitions of the construct(s) of measurement, summarizes how the assessment will provide evidence of the construct(s) identified in the rationale, and describes the processes for reasoning from assessment items and scores to making intended inferences regarding the construct(s) of measurement. The framework also describes the intended population for which the assessment is meant to provide valid inferences. Appropriate evidence will vary based on the construct to be measured and the proposed use(s) of the assessment. For example, if the purpose of a new algebra assessment is to predict readiness for the study of higher mathematics, evidence of both content coverage and prediction of future performance in advanced mathematics classes would be convincing. Similarly, validity

[19] The standards are under revision and the currently available version is: American Educational Research Association (1999). *Standards for Educational and Psychological Testing*. AERA: Washington, DC.

evidence for a new assessment of mathematical reasoning would prioritize documentation of the processes students use in responding to items.

5) Discuss how your validation activities fit within the conceptual framework and will provide convincing evidence of the validity of the assessment scores for specific purposes and populations.

6) Note if you are applying for a second Measurement award to further develop or validate an assessment that was the focus of a previous Measurement award, and, justify the need for a second award, and describe the results and outcomes of the previous award (e.g., the status of the assessment and its validation).

In presenting the significance of your project to **validate an existing assessment**, you should do the following.

1) Describe the specific need for validating an existing assessment. Discuss how the results of this work will be important both to the field of education research, and to education practice and education stakeholders (e.g., practitioners and policymakers).

2) Describe the current assessment you propose to validate.

3) Describe current validation evidence for this assessment and why it is not satisfactory for the proposed purpose(s).

4) Describe the **conceptual framework** for the assessment. The conceptual framework provides operational definitions of the construct(s) of measurement, summarizes how the assessment provides evidence of the construct(s) identified in the rationale, and describes the processes for reasoning from assessment items and scores to making intended inferences regarding the construct(s) of measurement. The framework also describes the intended population for which the assessment is meant to provide valid inferences.

5) Discuss how your validation activities fit within the conceptual framework and will provide convincing evidence of the validity of the assessment scores for specific purposes and populations.

It can be helpful to end the Significance section with a summary paragraph justifying the importance of the proposed work. From the reviewers' perspective, such a paragraph organizes the arguments made throughout the Significance section and better prepares them to read the Research Plan.

(ii) Research Plan

The Research Plan must clearly describe the methods for developing/refining and/or validating the assessment and how psychometric evidence will be gathered to support the utility of the assessment for the prescribed purpose. The sample and setting for each of these must be defined and shown to be appropriate for meeting the research aims of the project. Data analysis plans must include plans for treatment of missing responses and criteria for interpreting results. You must describe the characteristics, size, and analytic adequacy of samples to be used in each study, including justification for exclusion and inclusion criteria.

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

If you are proposing to collect original data you must carefully describe the sample, measures (including reliability and validity for the specified purpose), and procedures proposed for the primary data collection.

If observational data will be collected, you must describe how the data will be collected (e.g., procedures for maintaining inter-observer reliability), coded, and analyzed.

Projects to Develop/Refine and Validate Assessments

Your application should describe the iterative process that will be used in designing and/or refining the assessment. This description should include detail on plans for field testing and revising items. In addition, you should describe how you will address the following aspects in assessment design to increase the assessment's capacity to provide valid inferences:

a) Iterative procedures for developing, field testing, and selecting items to be used in the assessment and obtaining representative responses to items.

b) Procedures for scoring the assessment, including justification for the scaling model that will be used to create scores. For example, if item response theory will be used to create scores describe the model that will be applied.

c) Procedures for determining the reliability of the assessment for the intended purpose and population.

d) Procedures for determining the validity of the assessment for the intended population, including:
   - procedures for demonstrating adequate coverage of the construct,
   - procedures for minimizing the influence of factors that are irrelevant to the construct,
   - justification for the types of convergent and divergent validity evidence that will be used (e.g., expert review, prediction of related outcomes, relationship to other outcomes), and
   - description of the statistical models and analyses that will be used (e.g., structural equation modeling).

e) Plans for establishing the fairness of the test for all members of the intended population (e.g., differential item functioning).

f) Processes for determining the administrative procedures for conducting the assessment (e.g., mode of administration, inclusion/exclusion of individual test takers, accommodations, and whether make-ups or alternative administrative conditions will be allowed).

g) *If alternate forms will be developed*, the procedures for establishing the equivalency of the forms (i.e., horizontal equating).

h) *If the proposed assessment is used to measure growth*, the procedures for establishing a developmental scale (e.g., vertical equating).

Projects to Validate an Assessment

Your application should describe the theoretical and analytic steps that you will undertake to provide evidence that an assessment measures the intended construct for a given purpose and population. You should address the following issues in assessment validation:

a) Procedures for determining the reliability of the assessment for the intended purpose and population.

b) Procedures for demonstrating adequate coverage of the construct.

c) Procedures for minimizing the influence of factors that are irrelevant to the construct.

d) Justification for the types of convergent and divergent validity evidence that will be used (e.g., expert review, prediction of related outcomes, relationship to other outcomes).

e) Description of the statistical models and analyses that will be used (e.g., structural equation modeling).

Your description should include information on the types of validity evidence that will be used and justification for the adequacy of the evidence to support use of the assessment. For example, review by content experts may be an important component in supporting the validity of a science assessment, whereas analysis of how well the assessment predicts academic outcomes may be most appropriate for a behavioral measure. You should describe the rationale for the types of validity arguments that are most appropriate for the assessment and also provide details on the statistical models and analyses that will be conducted.

(iii) Personnel

For your application to be competitive, you will need a research team that collectively demonstrates the expertise in content domain(s), assessment development and administration, psychometrics, and statistical analysis to support your scope of work. In many projects it will be also be important to include staff with expertise working with teachers, in schools, or in other education delivery settings in which the proposed assessment is intended to be used.

This section should identify all key personnel on the project team including those from other organizations. You should briefly describe the following for all key personnel:

1) qualifications,
2) roles and responsibilities within the project,
3) percent of time and calendar months per year (academic plus summer) to be devoted to the project, and
4) past success at disseminating research findings in peer-reviewed scientific journals.

(iv) Resources

You should describe the institutional resources of all the institutions involved in the proposed research that will be used to support your Measurement study. You should describe your access to the schools (or other education delivery settings) in which the research will take place and to any data sets that you require. In addition, you should include letters of support in Appendix C documenting the participation and cooperation of the schools and/or the organizations holding the data. These letters should convey that the organizations understand what their participation in the study will involve (e.g., annual student and teacher surveys, student assessments, providing specific data sets).

If you have previously received a Measurement award and are applying for a grant to develop/refine and/or validate a new assessment, you should indicate the status of the previous assessment, its current use in education research, and/or the citing of your validation work in studies that use the assessment. In addition, you should discuss any theoretical contributions made by your previous work. By demonstrating that the results from your previous project are being used in education research, you provide a stronger case for your new application.

c. Awards

Measurement grants may vary in time and cost due to the nature of the proposed work. For example, the development of a new assessment may require more time than refinement of an existing assessment or validation of an existing assessment. Projects using existing data may require less time than projects that require new data collection. Your proposed length of project should reflect the scope of work to be accomplished. **The maximum duration of a Measurement project is 4 years.** Development and validation costs vary according to the type of assessment proposed. Your budget should reflect the scope of the work to be done. **The maximum award is $1,600,000 (total cost = direct costs + indirect costs)**.

Please note that any application proposing a project length longer than the maximum duration will be deemed nonresponsive to the Request for Applications and will not be accepted for review. Similarly, an application proposing a budget higher than the maximum award will be deemed nonresponsive to the Request for Applications and will not be accepted for review.

PART IV GENERAL SUBMISSION AND REVIEW INFORMATION

16. 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, ranging from two to five years. Please see details for each goal in *Part III Research Goals*.

17. FUNDING AVAILABLE

Although the Institute intends to support the research topics described in this announcement, all awards pursuant to this request for applications are contingent upon the availability of funds and the receipt of meritorious applications. The Institute does not plan to award a specific number of grants under a particular topic or goal. Rather, 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 size of the award depends on the goal and scope of the project. Please attend to the maximums set for project length and budget for each goal in *Part III Research Goals*. **If you request a project length longer than the maximum or a budget higher than the maximum, your application will be deemed nonresponsive and will not be reviewed.**

18. 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.

Can I apply if I work at a for-profit developer or distributor of an intervention?

Yes, you may apply if you or your collaborators develop, distribute, or otherwise market products or services (for-profit or not-for-profit) that can be used as interventions or components of interventions in the proposed research activities. However, the involvement of the developer or distributor **must not jeopardize the objectivity of the research**. In cases where the developer or distributor is part of the proposed research team, you should discuss how you will ensure the objectivity of the research in the project narrative.

Can I apply if I am not located in the United States or if I want to collaborate with researchers located outside of the United States?

You may submit an application if your institution is not located in the territorial United States. You may also propose working with sub-awardees who are not located in the territorial United States. In both cases, your proposed work must be relevant to education in the United States. Also, institutions not located in the territorial U.S. (both primary grantees and sub-awardees) **cannot charge indirect costs**.

Can I apply to do research on non-U.S. topics or using non-U.S. data?

All research supported by the Institute **must be relevant to education in the United States**.

19. 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.

Your institution is responsible for identifying the Principal Investigator. Your institution may elect to designate more than one Principal Investigator. In so doing, the institution identifies them as individuals who share the authority and responsibility for leading and directing the research project 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 project. The role of this person is primarily for communication purposes on the scientific and related budgetary aspects of the project and should be listed as the Principal Investigator. All other Principal Investigators should be listed as Co-Principal Investigators.

The Principal Investigator is expected to attend one meeting each year (for up to 3 days) in Washington, D.C. with other grantees and Institute staff. The project's budget should include this meeting. Should the Principal Investigator not be able to attend the meeting, he/she can designate another member of the research team to attend.

20. SPECIAL CONSIDERATIONS FOR INDIRECT COST RATES

When calculating your expenses for research conducted in field settings, you should apply your institution's negotiated off-campus indirect cost rate, as directed by the terms of your institution's negotiated agreement with the federal government.

Institutions, both primary grantees and sub-awardees, not located in the territorial US cannot charge indirect costs.

21. DEMONSTRATING ACCESS TO DATA AND EDUCATION DELIVERY SETTINGS

You may propose to conduct research that requires access to studies currently under way, secondary data sets, or education delivery settings (e.g., classrooms, schools, districts). In such cases, you will need to provide evidence that you have access to these resources prior to receiving funding. Whenever possible, you should include letters of support from those who have responsibility for or access to the data or settings you wish to incorporate when you submit your application. Even in circumstances where you have included such letters with your application, the Institute may require additional supporting evidence prior to the release of funds. If you cannot provide such documentation, **the Institute may not award the grant or may withhold funds.**

You will need supporting evidence of partnership or access if you are:

Building off of existing studies

You may propose studies that piggyback onto an ongoing study (i.e., that require 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.

Using secondary data sets

If your application is being considered for funding based on scientific merit scores from the peer review panel and your research relies on access to secondary data sets (such as federally-collected data sets, state or district administrative data, or data collected by you or other researchers), you will need to provide documentation that you have access to the necessary data sets in order to receive the grant. This means that if you do not have permission to use the proposed data sets at the time of application, you must provide documentation to the Institute from the entity controlling the data set(s) before the grant will be awarded. This documentation must indicate that you have permission to use the data for the proposed research for the time period discussed in the application. If you obtained permission to use a proposed data set prior to submitting your application, the Institute may ask you to provide updated documentation indicating that you still have permission to use the data set to conduct the proposed research during the project period.

Conducting research in or with education delivery settings

If your application is being considered for funding based on scientific merit scores from the peer review panel and your research relies on access to education delivery settings (e.g., schools), you will need to provide documentation that you have access to the necessary settings in order to

receive the grant. This means that if you do not have permission to conduct the proposed project in the necessary number of settings at the time of application, you will need to provide documentation to the Institute indicating that you have successfully recruited the necessary number of settings for the proposed research before the full first-year costs will be awarded. If you recruited sufficient numbers of settings prior to the application, the Institute may ask you to provide documentation that the schools originally recruited for the application are still willing to partner in the research.

In addition to obtaining evidence of access, the Institute strongly advises applicants to establish a written agreement, within three months of receipt of an award, 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.

22. PUBLIC AVAILABILITY OF RESULTS

Recipients of awards are expected to publish or otherwise make publicly available the results of the work supported through this program. Institute-funded investigators **must 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. Investigators and their Institutions are responsible for ensuring that any publishing or copyright agreements concerning submitted articles fully comply with this requirement.

23. SPECIAL CONDITIONS ON GRANTS

The Institute may impose special conditions on a grant if the applicant or grantee is not financially stable; has a history of unsatisfactory performance; has an unsatisfactory financial or other management system; has not fulfilled the conditions of a prior grant; or is otherwise not responsible.

24. SUBMITTING A LETTER OF INTENT

The Institute asks that you submit a letter of intent by **4:30 p.m.** Washington D.C. time on the relevant due date for the competition to which you plan to submit. Institute staff use the information in the letters of intent to identify the expertise needed for the scientific peer review panels, secure a sufficient number of reviewers to handle the anticipated number of applications, and provide feedback to you on your research idea. The Institute encourages you to submit a letter of intent even if you think you 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 must be submitted electronically using the instructions provided at https://iesreview.ed.gov. Receipt of the letter of intent will be acknowledged via email. Should you miss the deadline for submitting a letter of intent, you still may submit an application. If you miss the deadline, the Institute asks that you inform the relevant program officer of your intention to submit an application.

A. Content

The letter of intent should include:

1) Descriptive title
2) Topic and goal that you will address
3) Brief description of the proposed project
4) Name, institutional affiliation, address, telephone number and e-mail address of the Principal Investigator and any Co-Principal Investigators
5) Name and institutional affiliation of any key collaborators and contractors
6) Duration of the proposed project
7) Estimated total budget request (the estimate need only be a rough approximation)

B. Format and Page Limitation
Begin by selecting the letter of intent form for the research topic that you plan to submit your application under (http://iesreview.ed.gov). The online submission form contains fields for each of the seven content areas listed above. Use these fields to provide the requested information. The project description should be single-spaced and should not exceed one page (about 3,500 characters).

25. APPLICATION INSTRUCTIONS AND APPLICATION PACKAGE

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

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

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

2) The *IES Grants.gov Application Submission Guide* provides the instructions for completing and submitting the forms included in the Application Package.

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

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

   ✓ Grants.gov User Guides http://www.grants.gov/applicants/app_help_reso.jsp

3) The *Application Package* provides all of the forms that you must complete and submit. The application form approved for use in the competitions specified in this RFA is the government-wide SF-424 Research and Related (R&R) Form (OMB Number 4040-0001). *Section C* below explains how 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/ by the following dates:

June Application Package	April 19, 2012
September Application Package	July 19, 2012

C. How to Download the Correct Application Package

a. CFDA number
To find the correct downloadable Application Package, you must first search by the CFDA number for the research competition *without* the alpha suffix. To submit an application to the Special Education Research Grants program, you 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. There are two Application Packages for Special Education Research: one must be used for applications submitted under the June application deadline, and the other must be used for the September application deadline. The Application Packages are differentiated by a numerical suffix, -1 or -2 added to the CFDA number 84.324A.

June Application Package:	Special Education Research CFDA 84.324A-1
September Application Package:	Special Education Research CFDA 84.324A-2

You must download the Application Package that is designated for the grant competition and competition deadline. If you use a different Application Package, even if it is for an Institute competition, the

application will be submitted to the wrong competition. Applications submitted using the incorrect application package may not be reviewed for the Special Education Research competition.

26. MANDATORY ELECTRONIC SUBMISSION OF APPLICATIONS AND DEADLINE

Applications must be **submitted electronically and received by 4:30:00 p.m**., **Washington, DC time** on the application deadline date.

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

Please note that to submit an electronic application through Grants.gov, your institution must be registered with Grants.gov (http://www.grants.gov/applicants/organization_registration.jsp).

To register with Grants.gov, your institution must have a

- a valid Dun and Bradstreet Data Universal Numbering Systems (DUNS) number, and
- an active registration with the Central Contractor Registry (CCR).

Your institution is strongly encouraged to start the Grants.gov registration process *at least four weeks* prior to the application due date.

Applications submitted in paper format will be rejected unless you (a) qualify 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) submit, no later than two weeks before the application deadline date, a written statement to the Institute that documents that you qualify for one of these exceptions. For more information on using Grants.gov, you should visit the Grants.gov web site.

27. TECHNICAL ASSISTANCE FOR APPLICANTS

The Institute encourages you to contact the Institute's program officers as you develop your application. Program officers can offer advice on choosing the appropriate research topic and goal to apply under and preparing applications, as well as substantive advice on your research idea and draft project narrative. To identify the appropriate program officer for your research idea, see *Section 34. Inquiries Can Be Sent To* below or the relevant topic area in *Part II Research Grant Topics*.

In addition, you are encouraged to sign up for the Institute's funding opportunities webinars for advice on choosing the correct research competition, grant writing, or submitting your application. For more information regarding webinar topics, dates, and registration process, see http://ies.ed.gov/funding/webinars/index.asp.

28. WRITING YOUR 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) Appendix A, (d) Appendix B, (e) Appendix C, (f) Appendix D and (g) bibliography and references cited. Instructions for all other documents to be included in the application (i.e., the SF-424 forms, biographical sketches, narrative budget justification, and 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, Appendix A, Appendix B, Appendix C, Appendix D and bibliography are described in this section. You must adhere to the type size and format specifications for the entire narrative, including footnotes, to ensure that your

text is easy for reviewers to read and that all applicants have the same amount of available space in which to describe their projects.

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.
- The 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.
- The type size must yield no more than 6 lines of type within a vertical inch.

To ensure your font meets these requirements, you 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. **These requirements apply to the PDF file as submitted.**

When applicants use small type size, it difficult for reviewers to read the application and applicants may receive an unfair advantage by allowing for more text in their applications. **Consequently, the use of small type font is grounds for the Institute to not accept an application for review.**

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
The Institute encourages applicants to use black and white in graphs, diagrams, tables, and charts. If you choose to use color, you must ensure that the material reproduces well when photocopied in black and white.

C. Project Summary/Abstract
a. Submission
You must submit the project summary/abstract as a separate .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 *Section 28.B General Format Requirements*..

c. Content
The project summary/abstract should include:

1) Title of your project
2) The RFA topic and goal under which you are applying (e.g., Mathematics and Science Education, Development and Innovation goal)
3) A brief description of the purpose of the project (e.g., to develop and document the feasibility of an intervention)
4) A brief description of the setting in which your research will be conducted (e.g., rural school districts in Alabama)

5) A brief description of the sample that will be involved in the study (e.g., age or grade level, race/ethnicity, SES)
6) If applicable, a brief description of the intervention or assessment to be developed, evaluated or validated
7) If applicable, a brief description of the control or comparison condition (i.e., who the participants in the control condition are and what they will experience)
8) A brief description of the primary research method
9) A brief description of measures and key outcomes
10) A brief description of the data analytic strategy

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

D. Project Narrative

a. Submission

You must submit the project narrative as a separate .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 SF-424 forms, the 1-page summary/abstract, the appendices, research on human subjects information, bibliography, biographical sketches of senior/key personnel, narrative budget justification, subaward budget information, or certifications and assurances. If the Institute determines that the narrative exceeds the 25 single-spaced page limit, the Institute will remove any pages after the twenty-fifth page of the narrative.

To help the reviewers locate information and conduct the highest quality review, you should write a concise and easy to read application, 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, you 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, 6th Ed.* (American Psychological Association, 2009).

d. Content

Your project narrative must include **four sections** in order to be compliant with the requirements of the Request for Applications: (a) **Significance**, (b) **Research Plan**, (c) **Personnel**, and (d) **Resources**. Information to be included in each of these sections is detailed in *Part III Research Goals* and in the specific content and sample specific requirements for each research topic in *Part II Research Grant Topics*. The information you include in each of these four sections will provide the majority of the information on which reviewers will evaluate the application.

E. Appendix A (Required for Resubmissions, Optional Otherwise)

a. Submission

If you have an Appendix A, you must include it at the end of the project narrative and submit it 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 28.B General Format Requirements*.

c. Content

(i) Required Content for Resubmissions

Appendix A is required if you are resubmitting an application or are submitting an application that is similar to an application you submitted previously. If you are resubmitting an application, you must provide a description (up to 3 pages in length) of how the revision is responsive to prior reviewer comments. If you have submitted a somewhat similar application in the past but are submitting the current application as a new application, you must provide a rationale (up to 3 pages in length) explaining why the current application should be considered a "new" application rather than a "resubmitted" application.

(ii) Optional Content for All Applications

You may also include figures, charts, or tables that supplement the project narrative as well as examples of measures (e.g., tests, surveys, observation and interview protocols) to be used in the project in Appendix A. These are the only materials that may be included in Appendix A; all other materials will be removed prior to review of the application. You should include narrative text in the 25-page project narrative, not in Appendix A.

F. Appendix B (Optional)

a. Submission

If you choose to have an Appendix B, you must include it at the end of the project narrative, following Appendix A (if included), and submit it as part of the same .PDF attachment.

b. Page limitations and format requirements

Appendix B is limited to 10 pages. It must adhere to the margin, format, and font size requirements described in *Section 28.B General Format Requirements*.

c. Content

In Appendix B, if you are proposing to study, develop, evaluate, or validate an intervention or assessment you may include examples of curriculum material, computer screen shots, assessment items, or other materials used in the intervention or assessment to be developed, evaluated, or validated. These are the only materials that may be included in Appendix B; all other materials will be removed prior to review of the application. You should include narrative text describing these materials in the 25-page project narrative, not in Appendix B.

G. Appendix C (Optional)

a. Submission

If you choose to have an Appendix C, you must include it at the end of the project narrative, following Appendix B (or if no Appendix B is included, then Appendix C should follow Appendix A if it is included) and submit it as part of the same .PDF attachment.

b. Page limitations and format requirements

Appendix C does not have a page limit. Appendix C contains letters of agreement from research partners (e.g., schools, districts, states, consultants). You must ensure that the letters reproduce well so that reviewers can easily read them. Do not reduce the size of the letters.

c. Content

You should include in Appendix C the letters of agreement from partners (e.g., schools and districts), data sources (e.g., state agencies holding administrative data), and consultants.

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. A common reason for projects to fail is loss of participating schools and districts. Letters of agreement regarding the provision of data should make it clear that the

author of the letter will provide the data described in the application for use in the proposed research and in time to meet the proposed schedule.

H. Appendix D (required only for applications under the Effectiveness Goal)

a. Submission

If you are applying under the Effectiveness goal, you must include Appendix D at the end of the project narrative, following the other Appendices included, and submit it as part of the same .PDF attachment. If you are applying under any other research goal, you should not include Appendix D.

b. Page limitations and format requirements

Appendix D is limited to 5 pages. It must adhere to the margin, format, and font size requirements described in *Section 28.B General Format Requirements*.

c. Content

You should include in Appendix D your Data Sharing Plan (DSP). The requirements for the DSP are discussed under *Requirements for Goal Four: Effectiveness*, *Section C. Data Sharing Plan*.

I. Bibliography and References Cited

a. Submission

You must submit this section 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 28.B General Format Requirements*.

c. Content

You 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 project narrative.

29. APPLICATION PROCESSING

Applications must be **submitted electronically and received by 4:30:00 p.m., Washington, D.C. time** on the application deadline date listed in the heading of this Request for Applications. After receiving the applications, Institute staff will review each application 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.

Once you formally submit an application, Institute personnel will not comment on its status until the award decisions are announced except with respect to issues of completeness and eligibility.

30. PEER REVIEW PROCESS

The Institute will forward all applications that are compliant and responsive to this request to be evaluated for scientific and technical merit. Reviews are conducted in accordance with the review criteria stated below, and the review procedures posted on the Institute's website http://ies.ed.gov/director/sro/peer_review/application_review.asp, by a panel of scientists who have substantive and methodological expertise appropriate to the program of research and Request for Applications.

Each compliant and responsive application is 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, the Institutes calculates an average overall score for each

application and prepares a preliminary rank order of applications 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 application that he or she believes merits full panel review but that would not have been included in the full panel meeting based on its preliminary rank order.

31. REVIEW CRITERIA FOR SCIENTIFIC MERIT

The purpose of Institute-supported research is to contribute to solving 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. The Institute expects reviewers for all applications 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 Research Goals* and in the section describing the relevant research grant topic within *Part II Research Grant Topics*.

A. Significance

Does the applicant provide a compelling rationale for the significance of the project as defined in the Significance section for the goal under which the applicant is submitting the application?

B. Research Plan

Does the applicant meet the methodological requirements described in the Research Plan section for the goal under which the applicant is submitting the application?

C. Personnel

Does the description of the personnel make it apparent that the Principal Investigator 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?

32. RECEIPT AND START DATE SCHEDULE

A. Letter of Intent Receipt Dates

June Application Letter of Intent	April 19, 2012
September Application Letter of Intent	July 19, 2012

B. Application Deadline Dates

June Application Deadline Date	June 21, 2012
September Application Deadline Date	September 20, 2012

C. Earliest Anticipated Start Date

For June Application	March 1, 2013
For September Application	July 1, 2013

D. Latest Possible Start Date

For June Application	September 1, 2013
For September Application	September 1, 2013

The grant review and award process takes approximately eight months from the time of submission of the application. Applicants will be notified about funding decisions via email *no later than* the earliest anticipated start date (March 1, 2013 or July 1, 2013).

33. 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, and
- Availability of funds.

34. INQUIRIES MAY BE SENT TO

A. Autism Spectrum Disorders

Dr. Amy Sussman
Institute of Education Sciences
400 Maryland Ave, SW
CP – 510d
Washington, DC 20202

Email: Amy.Sussman@ed.gov
Telephone: (202) 219-2126

B. Cognition and Student Learning in Special Education

Dr. Amy Sussman
Institute of Education Sciences
400 Maryland Ave, SW
CP – 510d
Washington, DC 20202

Email: Amy.Sussman@ed.gov
Telephone: (202) 219-2126

C. Early Intervention and Early Learning in Special Education

Dr. Joan McLaughlin
Institute of Education Sciences
400 Maryland Ave, SW
CP – 510h
Washington, DC 20202

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

D. Families of Children with Disabilities

Dr. Amy Sussman
Institute of Education Sciences
400 Maryland Ave, SW
CP – 510d
Washington, DC 20202

Email: Amy.Sussman@ed.gov
Telephone: (202) 219-2126

E. Mathematics and Science Education

Dr. Rob Ochsendorf
Institute of Education Sciences
400 Maryland Ave, SW
CP – 510g
Washington, DC 20202

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

F. Professional Development for Teachers and Related Services Providers

Dr. Rob Ochsendorf
Institute of Education Sciences
400 Maryland Ave, SW
CP – 510g
Washington, DC 20202

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

G. Reading, Writing, and Language Development

Dr. Kristen Lauer
Institute of Education Sciences
400 Maryland Ave, SW
CP – 508h
Washington, DC 20202

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

H. Social and Behavioral Outcomes to Support Learning

Dr. Jacquelyn Buckley
Institute of Education Sciences
400 Maryland Ave, SW
CP – 510c
Washington, DC 20202

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

I. Special Education Policy, Finance, and Systems

Dr. Amanda Hoffman
Institute of Education Sciences
400 Maryland Ave, SW
CP – 510b
Washington, DC 20202

Email: Amanda.Hoffman@ed.gov
Telephone: (202) 208-1177

J. Technology for Special Education

Dr. Rob Ochsendorf
Institute of Education Sciences
400 Maryland Ave, SW
CP – 510g
Washington, DC 20202

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

K. Transition Outcomes for Secondary Students with Disabilities

Dr. Amanda Hoffman
Institute of Education Sciences
400 Maryland Ave, SW
CP – 510b
Washington, DC 20202

Email: Amanda.Hoffman@ed.gov
Telephone: (202) 208-1177

35. 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.

36. 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.

37. REFERENCES

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National Research Council and Institute of Medicine (2000) *From Neurons to Neighborhoods: The Science of Early Childhood Development.* Committee on Integrating the Science of Early Childhood Development. Jack P. Shonkoff and Deborah A. Phillips, eds. Board on Children, Youth, and Families, Commission on Behavioral and Social Sciences and Education. Washington, D.C.: National Academy Press.

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