![IES Institute of Education Sciences logo]

REQUEST FOR APPLICATIONS

Special Education Research Grants
CFDA Number: 84.324A

Milestone	Date	Website
Letter of Intent Due	June 21, 2018	https://iesreview.ed.gov/
Application Package Available	June 21, 2018	http://www.grants.gov/
Application Due	**No later than 4:30:00 p.m. Eastern Time August 23, 2018**	**http://www.grants.gov/**
Applicants Notified	By July 1, 2019	https://iesreview.ed.gov/
Possible Grant Start Dates	July 1, 2019 to September 1, 2019	

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PART I: OVERVIEW AND GENERAL REQUIREMENTS

A. INTRODUCTION

In this announcement, the Institute of Education Sciences (Institute) requests applications for research projects that will contribute to its Special Education Research Grants program (CFDA 84.324A). Through this program, the Institute seeks to expand the knowledge base and understanding of infants, toddlers, children, and youth with disabilities through advancing the understanding of and practices for teaching, learning, and organizing education systems.

The Institute will consider only applications that are compliant and responsive to the requirements described in this Request for Applications (RFA) and submitted electronically via Grants.gov by the stated deadline. Separate funding announcements are available on the Institute's website that pertain to other discretionary grant competitions funded through the Institute's National Center for Special Education Research (http://ies.ed.gov/ncser/) and the Institute's National Center for Education Research (http://ies.ed.gov/ncer/). An overview of the Institute's research grant programs is available at http://ies.ed.gov/funding/overview.asp.

The Institute believes that 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 and the accessibility and usability of their findings for the day-to-day work of education practitioners and policymakers. In addition, the Institute expects researchers to disseminate their results to a wide range of audiences that includes researchers, policymakers, practitioners, and the public.

The Special Education Research Grants program uses a topic and goal structure to divide the research process into stages for both theoretical and practical purposes. Each application must be submitted to one topic and one goal. Individually, the topics and goals are intended to help focus the work of researchers. 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. 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 Institute's topics and goals should not only yield information about the practical benefits and the effects of specific interventions on education outcomes but also contribute to the bigger picture of scientific knowledge and theory on learning, instruction, and education systems.

This RFA is organized as follows. Part I sets out the general requirements for a grant application. Parts II and III provide further detail on two of those requirements, topics and goals, respectively. Part IV provides general information on applicant eligibility and the review process. Part V describes how to prepare an application. Part VI describes how to submit an application electronically using Grants.gov.

You will also find a glossary of important terms located at the end of this RFA. The first use of each term is hyperlinked to the Glossary within each Part of this RFA, and within each Goal section in Part III.

1. **Technical Assistance for Applicants**

The Institute encourages you to contact the Institute's Program Officers as you develop your application. Program Officers can provide guidance on substantive aspects of your application and answer any questions prior to submitting an application. Program Officer contact information is listed by topic in Part II and in Part VI.H: Program Officer Contact Information.

The Institute asks potential applicants to submit a Letter of Intent prior to the application submission deadline to facilitate communication with Program Officers and to plan for the scientific peer review process. Letters of Intent are optional but strongly encouraged. If you submit a Letter of Intent, a Program Officer will contact you regarding your proposed research. Institute staff also use the information in the Letters of Intent to identify the expertise needed for the scientific peer review panels and to secure a sufficient number of reviewers to handle the anticipated number of applications.

In addition, the Institute encourages you to watch the Institute's Funding Opportunities Webinars for information on its research competitions, including advice on choosing the correct research competition, grant writing, or submitting your application. For more information regarding webinar topics, and webinar procedures, see http://ies.ed.gov/funding/webinars/index.asp.

B. GENERAL REQUIREMENTS

Applications under Special Education Research Grants program **must meet the requirements** set out under the subheadings below, (1) Students With or At Risk for Disabilities, (2) Student Outcomes, (3) Authentic Education Settings, (4) Topics, (5) Goals, and (6) Dissemination, in order to be sent forward for scientific peer review.

1. **Students With or At Risk for Disabilities**

All research supported under the Special Education Research Grants program **must** focus on children with or at risk for disabilities.

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

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

For the purpose of the Institute's special education research programs, a child at risk for a disability is identified on an individual child basis. If you study children at risk for disabilities, present research-based evidence of an association between risk factors in your proposed sample and the potential identification of specific disabilities. The determination of risk may include, for example, factors used for moving children to higher tiers in a Response to Intervention model. 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 should clearly identify the disability or disability categories that the sampled children are at risk of developing.

Across all topics, children without disabilities may be included in your sample (e.g., an inclusive classroom) if appropriate for the research questions. For example, children without disabilities may be part of the comparison population or part of the research sample for assessment development and validation.

2. Student Outcomes

All research supported under the Special Education Research Grants program **must** address (1) children and youth in the age/grade levels described below and (2) education outcomes of those children and youth, and **must** include measures of these outcomes. The Institute also supports research on employment and earnings outcomes when appropriate.

You should include education outcomes of students that align with the theory of change for your proposed research, and you should describe this alignment when discussing all student outcomes and their measures. When possible, the Institute encourages you to consider assessing both proximal (or more direct and immediate) and distal (more long-term) student education outcomes. The Institute recognizes that it can be difficult to assess long-term student outcomes in studies focused on teachers, or systems-level interventions, given the time limits in the grant awards. You should use your theory of change to argue for the most appropriate student outcomes given these time limitations.

The Institute is most interested in student outcomes that support success in school and afterwards, including:

- For **infants and toddlers**, the primary outcomes are developmental outcomes pertaining to cognitive, communicative, linguistic, social, emotional, adaptive, functional, or physical development.

- For **preschool**, the primary outcomes are developmental outcomes (cognitive, communicative, linguistic, social, emotional, adaptive, functional, or physical development) and school readiness (e.g., pre-reading, language, vocabulary, early-STEM [science, technology, engineering, and/or mathematics] knowledge, social and behavioral competencies, including self-regulation and executive function), that prepare young children for school.

- For **kindergarten through Grade 12,**[1,2] student outcomes include learning, achievement, and higher-order thinking in the core academic content areas of reading, writing, and STEM (science, technology, engineering, and/or mathematics) measured by specific assessments (e.g., researcher-developed assessments, standardized tests, grades, end-of-course exams, exit exams) and student progression through education (e.g., persistence and completion of high school course credits in content areas, high school graduation, certificates, dropout). A range of student

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[1] Grade 12 includes students who are 18 years or older and are still receiving services under IDEA.
[2] For the Transition, CTE, and Systems-Involved Students topics only, your sample may include students at the post-secondary level *if the purpose is to improve services and interventions provided at the secondary level* (e.g., you may collect data from recent high school graduates to inform the development or assess the impact of school- or community-based transition programs or practices).

social skills, attitudes, and behaviors may be important to students' education and post-school success, so important outcomes also include behaviors that support learning in academic contexts. In addition, the Institute is interested in functional outcomes that improve educational results and transitions to employment, independent living, and postsecondary education for students with disabilities.

- o The Institute also supports research on student **employment and earnings outcomes**, such as hours of employment, job stability, wages, and benefits when it is appropriate to do so. In general, such outcomes are pertinent only to studies proposed under topics that address transition outcomes for secondary students with disabilities, including Transition Outcomes for Secondary Students with Disabilities, Special Topic: Career and Technical Education for Students with Disabilities, and Special Topic: Systems-Involved Students with Disabilities.

3. Authentic Education Settings

Proposed research must be relevant to education in the United States and **must** address factors under the control of the U.S. education system, whether at the national, state, local, and/or school level. To help ensure such relevance, the Institute requires researchers to work within or with data from authentic education settings.

Authentic education settings include both in-school settings and formal programs (e.g., early intervention and early childhood special education, after-school programs, distance learning programs, online programs) used by schools or state and local education agencies. These settings are defined as follows:

- **Authentic Education Settings for Infants and Toddlers**
  - o Homes
  - o Child care
  - o Natural settings for early intervention services

- **Authentic Preschool Settings**
  - o Homes
  - o Child care
  - o Preschool programs
  - o Natural settings for early childhood special education services

- **Authentic K-12 Education Settings**
  - o Schools and alternative school settings (e.g., alternative schools , juvenile justice settings)
  - o Homes, provided that the intervention is school-based (i.e., programs must be coordinated through the school or district)
  - o School systems (e.g., local education agencies or state education agencies)
  - o Formal programs that take place after school or out of school (e.g., after-school programs, distance learning programs, online programs) under the control of schools or state and local education agencies
  - o Settings that deliver direct education services (as defined in of the Elementary and Secondary Education Act of 1965, as amended by the Every Student Succeeds Act of 2015) (http://www2.ed.gov/policy/elsec/leg/esea02/index.html)
  - o Career and Technical Education Centers affiliated with secondary schools or school systems

The Institute permits a limited amount of laboratory research if it is carried out in addition to work within or with data from authentic education settings, but will not fund any projects that are exclusively based in laboratories. **Applications with 100 percent of the research taking place in laboratory**

settings will be deemed nonresponsive and will not be sent forward for scientific peer review.

4. Topics

The Institute uses a topic structure to encourage focused programs of research. The Institute's current topic structure include 14 topics: 11 standing research topics and 3 special topics. The research topic identifies your field of research. Your application **must** be directed to 1 of the 14 topics (see Part II Topic Description and Requirements).

The Institute's 11 standing research topics include:

1. Autism Spectrum Disorders
2. Cognition and Student Learning in Special Education
3. Early Intervention and Early Learning in Special Education
4. Families of Children with Disabilities
5. Professional Development for Teachers and School-Based Service Providers
6. Reading, Writing, and Language Development
7. Science, Technology, Engineering, and Mathematics (STEM) Education
8. Social and Behavioral Outcomes to Support Learning
9. Special Education Policy, Finance, and Systems
10. Technology for Special Education
11. Transition Outcomes for Secondary Students with Disabilities

For FY 2019, the Institute introduces special research topics to provide additional encouragement for research in under-studied areas that appear promising for improving outcomes for students with disabilities, and that are of interest to policymakers and practitioners. These special research topics are offered on a limited time basis to bring attention to them while also allowing them to be reintegrated in later years into one or more of the standing topics as appropriate.

The Institute's three special research topics include:

1. Special Topic: Career and Technical Education for Students with Disabilities
2. Special Topic: English Learners with Disabilities
3. Special Topic: Systems-Involved Students with Disabilities

Each of the standing and special research topics has one dedicated Program Officer who can offer advice on which topic provides the best fit for your work. Program Officer contact information is provided in Part II Topics and is listed in Part VI.H. Your application must be directed to one of the 14 topics accepting applications for the FY 2019 competition.

5. Goals

The Institute uses a goal structure to encourage focused research along a continuum of research, development, and evaluation activities necessary for building a scientific research enterprise. Your application **must** be directed to one of five research goals (see Part III: Goal Descriptions and Requirements): Exploration; Development and Innovation; Efficacy and Follow-Up; Replication: Efficacy and Effectiveness; or Measurement. The research goal identifies the type and purpose of the work you will be doing within the topic-defined field. These goals are aligned with the Common Guidelines for Education Research and Development released by the Institute and the National Science Foundation (http://ies.ed.gov/pdf/CommonGuidelines.pdf). You should select the research goal that most closely aligns with the purpose of the research you propose, regardless of the specific methodology you plan to use.

- The Exploration goal supports the identification of malleable factors associated with student education outcomes and/or the factors and conditions that mediate or moderate that relationship. By doing so, Exploration projects are intended to build and inform theoretical foundations for (1) the development of interventions or the evaluation of interventions or (2) the development and validation of assessments.

- The Development and Innovation goal supports the development of new interventions and the further development or modification of existing interventions that are intended to produce beneficial impacts on student education outcomes when implemented in authentic education settings.

- The Efficacy and Follow-Up goal supports the initial evaluation of fully developed education interventions with evidence of promise for improving student education outcomes, as well as education interventions that are widely used but not yet rigorously tested, to determine whether they produce a beneficial impact on student education outcomes relative to a counterfactual when they are implemented in authentic education settings. The Efficacy and Follow-Up goal also supports follow-up studies of students or education personnel and retrospective studies.
  - Please note that for FY 2019, the requirements for this goal have changed. Please see Part III: Goal Descriptions and Requirements for a complete description of the Efficacy goal requirements.

- The Replication: Efficacy and Effectiveness goal supports replication research under two broad categories: Efficacy Replications and Effectiveness Studies. Under this goal, the Institute supports Effectiveness studies, which carry out the independent evaluation of fully developed education interventions with prior evidence of efficacy to determine whether they produce a beneficial impact on student education outcomes relative to a counterfactual when they are implemented by the end user under routine conditions in authentic education settings. In addition, under this goal the Institute will now also support Efficacy Replications and Re-analysis studies.
  - Please note that for FY 2019, the requirements for this goal have changed. Please see Part III: Goal Descriptions and Requirements for a complete description of the Replication: Efficacy and Effectiveness goal requirements

- The Measurement goal supports (1) the development of new assessments or refinement of existing assessments (Development/Refinement Projects) or (2) the validation of existing assessments for specific purposes, contexts, and populations (Validation Projects).

The Institute reminds applicants that mixed-methods approaches (a combination of high-quality quantitative and qualitative methods) are welcome in all goals and topics. Quantitative and qualitative approaches can complement one another and, when combined in a way that is appropriate to the research questions, can inform the research process at every stage from exploration through evaluation.

6. Dissemination

The Institute is committed to making the results of Institute-funded research available to a wide range of audiences. For example, the Institute has a public access policy (see http://ies.ed.gov/funding/researchaccess.asp) that requires all grantees to submit their peer-reviewed scholarly publications to the Education Resources Information Center (ERIC) and that requires grantees to share final research data from causal inference studies (i.e., Efficacy and Follow-Up Studies and Replication: Efficacy and Effectiveness studies) no later than the time of publication in a peer-reviewed scholarly publication.

To ensure that findings from the Special Education Research Grants program are shared with all interested audiences, the Institute **requires all applicants** to present a plan to disseminate project findings in Appendix A: Dissemination Plan of the application. The scientific peer reviewers will consider the quality of the Dissemination Plan presented in Appendix A as part of their review of the Significance

section of your Research Narrative. **Applications that do not contain a Dissemination Plan in Appendix A will be deemed noncompliant and will not be accepted for review.**

Dissemination plans should be tailored to the audiences that may benefit from the findings and reflect the unique purposes of the research goals.

- Identify the audiences that you expect will be most likely to benefit from your research (e.g., federal policymakers and program administrators, state policymakers and program administrators, state and local school system administrators, school administrators, teachers and other school staff, parents, students, other education researchers).

- Discuss the different ways in which you intend to reach these audiences through the publications, presentations, and products you expect to produce.

  o IES-funded researchers are expected to publish and present in venues designed for policymakers and practitioners in a manner and style useful and usable to this audience. For example:

    ➢ Report findings to the education agencies and schools that provided the project with data and data-collection opportunities.

    ➢ Give presentations and workshops at meetings of professional associations of teachers and leaders.

    ➢ Publish in practitioner journals.

    ➢ Engage in activities with relevant IES-funded Research and Development (R&D) Centers, Research Networks, or Regional Educational Laboratories (REL).

      ▪ R&D Centers: https://ies.ed.gov/ncser/RandD/

      ▪ Research Network: https://ies.ed.gov/ncer/research/researchNetworks.asp

      ▪ RELs: https://ies.ed.gov/ncee/edlabs/

  o IES-funded researchers who create products for use in research and practice as a result of their project (such as curricula, professional development programs, measures and assessments, guides, and toolkits) are expected to make these products available for research purposes or (after evaluation or validation) for general use. Consistent with existing guidelines, IES encourages researchers to consider how these products could be brought to market to increase their dissemination and use.

  o IES-funded researchers are expected to publish their findings in scientific, peer-reviewed journals and present them at conferences attended by other researchers.

- Your dissemination plan should reflect the purpose of your project's research goal.

  o Exploration (Goal One) projects are expected to identify potentially important associations between malleable factors and student outcomes. Findings from Exploration projects are most useful in pointing out potentially fruitful areas for further attention from researchers, policymakers, and practitioners rather than providing strong evidence for adopting specific interventions.

  o Development and Innovation (Goal Two) projects are expected to develop new or revise existing interventions and pilot them to provide evidence of promise for improving student outcomes. For example, if the results of your pilot study indicate the intervention is promising, dissemination efforts should focus on letting others know about the availability of the new intervention for more rigorous evaluation and further adaptation. Dissemination efforts from these projects could also provide useful information on the design process, how intervention development can be accomplished in partnership with practitioners, and the

types of new practices that are feasible or not feasible for use by practitioners. Your dissemination plan should also include information on the cost of the intervention.

o [Efficacy and Follow-Up](#) (Goal Three) projects and [Replication: Efficacy and Effectiveness](#) (Goal Four) projects are intended to evaluate the impact of an intervention on student outcomes. The Institute considers all types of findings from these projects to be potentially useful to researchers, policymakers, and practitioners and expects that these findings will be disseminated in order to contribute to the full body of evidence on the intervention and will form the basis for recommendations.

> ➢ Findings of a beneficial impact on student outcomes could support the wider use of the intervention and the further adaptation of the intervention to conditions that are different.

> ➢ Findings of no impacts on student outcomes (with or without impacts on more intermediate outcomes such as a change in teacher instruction) are important for decisions regarding the ongoing use and wider dissemination of the intervention, further revision of the intervention and its implementation, and revision of the theory of change underlying the intervention.

Your dissemination plan should also include information on the intervention's cost and cost-effectiveness.

o [Measurement](#) (Goal Five) projects are intended to support (1) the development of new assessments or refinement of existing assessments or (2) the validation of existing assessments. Dissemination of findings should clearly provide the psychometric properties of the assessment and identify the specific uses and populations for which it was validated. Should a project fail to validate an assessment for a specific use and population, these findings are important to disseminate in order to support decision making regarding their current use and further development. If you expect the assessment to be purchased by schools or other users, your dissemination plan should include information on its cost.

See [Part V.D.3 (Appendix A:Dissemination Plan)](#) for more information about the **required Dissemination plan** to include in your application.

C. APPLICANT REQUIREMENTS

1. Eligible Applicants

Applicants that have the ability and capacity to conduct scientific 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.

2. The Principal Investigator and Authorized Organization Representative

The Principal Investigator
The Principal Investigator (PI) 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 PI on a grant application and may elect to designate more than one person to serve in this role. In so doing, your institution identifies these PIs as sharing the authority and responsibility for leading and directing the research project intellectually and logistically. All PIs 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 PI. All other PIs should be listed as co-Principal Investigators.

The PI will attend one meeting each year (for up to 2 days) in Washington, DC with other Institute grantees and Institute staff. The project budget should include this meeting. Should the PI not be able to attend the meeting, they may designate another person who is key personnel on the research team to attend.

The Authorized Organization Representative
The Authorized Organization Representative (AOR) for the applicant institution is the official who has the authority to legally commit the applicant to (1) accept federal funding and (2) execute the proposed project. When your application is submitted through Grants.gov, the AOR automatically signs the cover sheet of the application, and in doing so, assures compliance with the Institute's policy on public access to scientific publications and data as well as other policies and regulations governing research awards (see Part IV.B: Additional Award Requirements).

3. **Common Applicant Questions**

- *May I submit an application if I did not submit a Letter of Intent?* Yes, but the Institute strongly encourages you to submit one. If you miss the deadline for submitting a Letter of Intent, contact the appropriate Program Officer for the topic you are interested in and that seems to best fit your research. Please see Part IV.C.1: Submitting a Letter of Intent for more information.

- *Is there a limit on the number of times I may revise and resubmit an application?* No. Currently, there is no limit on resubmissions. Please see Part IV.C.2: Resubmissions and Multiple Submissions for important information about requirements for resubmissions.

- *May I submit the same application to more than one of the Institute's grant programs?* No.

- *May I submit multiple applications?* Yes. You may submit multiple applications if they are substantively different from one another. Multiple applications may be submitted within the same topic, across different topics, or across the Institute's grant programs.

- *May I apply if I work at a for-profit developer or distributor of an intervention or assessment?* Yes. You may apply if you or your collaborators develop, distribute, or otherwise market products or services (for-profit or non-profit) that can be used as interventions, components of interventions, or assessments 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.

- *May I apply if I intend to copyright products (e.g., curriculum) developed using grant funds?* Yes. Products derived from Institute-funded grants may be copyrighted and used by the grantee for proprietary purposes, but the Department reserves a royalty-free, non-exclusive, and irrevocable right to reproduce, publish, or otherwise use such products for Federal purposes and to authorize others to do so [2 C.F.R. § 200.315(b)].

- *May I apply to do research on non-U.S. topics or using non-U.S. data?* Yes, but research supported by the Institute must be relevant to education in the United States and you should justify the relevance of such research in your application.

- *May 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?* Yes, 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 United States (both primary grantees and sub-awardees) may not charge indirect costs.

- *I am submitting an application to one of the two goals (Efficacy and Follow-Up or Replication: Efficacy and Effectiveness) for which a Data Management Plan (DMP) is required in Appendix F. How will IES review my Data Management Plan?* Program Officers will review the DMP for completeness and clarity and if your application is recommended for funding, you may be required to provide additional detail regarding your DMP (see Pre-Award Requirements). Please be sure to address all parts of the DMP as described under Part III.A.3: Efficacy and Follow-Up (Goal Three) and Part III.A.4 Replication: Efficacy and Effectiveness (Goal Four), and clearly describe your justification for your proposed plans and how they meet the expectations of the IES Data Sharing Policy. Please visit http://ies.ed.gov/funding/researchaccess.asp for information on the IES Data Sharing Policy and https://ies.ed.gov/funding/datasharing_implementation.asp for information on preparing your DMP.

- *Does the Institute support mixed methods research?* Yes. The Institute encourages the integration of qualitative and quantitative methods throughout the entire research process, from planning and inquiry to instrumentation design, data collection and analysis, and dissemination.

D. PRE-AWARD REQUIREMENTS
Applications that are being considered for funding following scientific peer review may be required to provide additional information on their proposed research activities before a grant award is made (see Part IV.B). For example, you will be required to provide updated Letters of Agreement showing access to the authentic education settings where your work is to take place or to the secondary datasets you have proposed to analyze. You may be asked for additional detail regarding your Research Plan and Dissemination Plan (required for all applicants) or your Data Management Plan (required only for applications submitted under the Efficacy and Follow-Up goal, Replication: Efficacy and Effectiveness goals). If significant revisions to the project arise from these information requests, they will have to be addressed under the original budget.

E. CHANGES IN THE FY 2019 REQUEST FOR APPLICATIONS
All applicants and staff involved in proposal preparation and submission, whether submitting a new application or submitting a revised application, **should carefully read all relevant parts of this RFA**, including the general requirements (see Part I.B: General Requirements) as well as the requirements and recommendations listed under each topic (see Part II: Topic Descriptions and Requirements) and each goal (see Part III: Goal Descriptions and Requirements), and the instructions for preparing your application (see Part V: Preparing your Application).
Major changes to the Special Education Research Grants program (CFDA 84.324A) competition in FY 2019 are listed below and described fully in relevant sections of the RFA.

- The Institute has revised Goals Three and Four in order to better support research that goes beyond a single efficacy study and to build a coherent body of work to support evidence-based decision making. In prior years, Goal Three supported initial efficacy evaluations as well as replication, follow-up, and retrospective studies, and Goal Four supported effectiveness studies (defined as independent evaluations of interventions with prior evidence of efficacy to determine their impacts when implemented under routine conditions). For the FY 2019 RFA the following changes have been made:

  o Efficacy and Follow-Up (Goal Three) will continue to support *initial* efficacy evaluations of interventions that have not been rigorously tested before, in addition to follow-up and retrospective studies.

  o Replication: Efficacy and Effectiveness (Goal Four) will now support all replications evaluating the impact of an intervention. Effectiveness studies, which are a type of replication study, will continue to be supported and are encouraged. Goal Four will now

also support Efficacy Replication studies and Re-analysis studies when a justification for such a study is provided.

- o Goal Four now contains a requirement to describe your plans to conduct analyses related to implementation and analyses of key moderators and/or mediators. Previously, these analyses were recommended but not required under Goal Four. The new requirement to conduct these types of analyses is intended to help ensure that replication studies make an additional contribution to understanding the intervention beyond that provided by the initial efficacy study.

- o The maximum award amounts under Goal Four have changed. Efficacy Replication studies have a maximum award amount of $3,600,000 (total cost = direct costs + indirect costs), Effectiveness studies have a maximum award amount of $4,000,000 (total cost = direct costs + indirect costs), and Re-analysis Studies have a maximum award amount of $700,000 (total cost = direct costs + indirect costs).

These changes were informed by feedback from a technical working group and a request for public comment, both of which highlighted the challenges of meeting the previous Goal Four requirements for an independent evaluation under routine conditions after an initial efficacy study, as well as the need for increased visibility and support for replication research.

The revisions are intended to

- o Better support the continuum of research from efficacy to effectiveness;

- o Signal the Institute's interest in supporting systematic replication studies that contribute to the larger evidence base on education interventions that have prior evidence of efficacy;

- o Provide clearer expectations and guidance around designing and conducting a variety of replication studies to better understand the replicability of intervention impacts and the conditions under which and for whom an intervention may or may not be effective; and

- o Advance our knowledge of interventions, their components, how they work, and their implementation.

- The Institute has revised requirements for cost analyses to allow schools, districts, and states to compare different interventions and identify which are most likely to lead to the greatest gains in student outcomes for the lowest costs.

    - o Goal Two now requires a cost analysis for interventions delivered in the pilot study, and encourages a cost-effectiveness analysis when possible.

    - o Goal Three and Goal Four now require a cost-effectiveness analysis for the primary student outcomes as well as the previously required cost analysis of the intervention being evaluated.

- The Mathematics and Science Education topic has been expanded to include a focus on Science, Technology, Engineering, and Mathematics (STEM) Education. The requirements for student outcomes listed in Part I.B: General Requirements has also been expanded to include all STEM outcomes.

- The Institute introduces special research topics to provide additional encouragement for research in under-studied areas that appear promising for improving student outcomes for students with disabilities, and that are of interest to policymakers and practitioners. In FY 2019, the Institute will accept applications under these three special research topics: Career and Technical Education (CTE) and Students with Disabilities, English Learners with Disabilities, and Systems-Involved Students with Disabilities (see Part II Topic Description and Requirements).

- The Institute has clarified its definition of Student Outcomes to include employment and earnings outcomes for the Transition Outcomes for Secondary Students with Disabilities topic, the Special Topic: Career and Technical Education for Student with Disabilities, and the Special Topic: Systems-Involved Students with Disabilities.

- Appendix A: Dissemination Plan will now be considered by the scientific peer reviewers as part of their review of the Significance section of your Research Narrative. In addition, reviewers will consider the resources you have available for dissemination as part of their review of the Resources section of the Project Narrative.

F. READING THE REQUEST FOR APPLICATIONS

Both the **Principal Investigator and Authorized Organization Representative should read this Request for Applications** to learn how to prepare an application that meets the following criteria:

1. Maximum Budget and Duration for the selected Research Goal (see Part III, and described below).

2. Criteria required for an application to be sent forward for scientific peer review (Requirements).

3. Criteria that make for a strong (competitive) application and are used by the scientific peer reviewers (Recommendations for a Strong Application).

1. Maximum Budget and Duration

Research Goal	Maximum Grant Duration	Maximum Grant Award
Exploration	Secondary Data Analysis only: 2 years	$600,000
	Primary Data Collection and Analysis: 4 years	$1,400,000
Development and Innovation	4 years	$1,400,000
Efficacy and Follow-Up	Initial Efficacy: 5 years	$3,300,000
	Follow-Up: 3 years	$1,100,000
	Retrospective: 3 years	$700,000
Replication: Efficacy and Effectiveness	Efficacy Replication: 5 years	$3,600,000
	Effectiveness Study: 5 years	$4,000,000
	Re-analysis Study: 3 years	$700,000
Measurement	4 years	$1,400,000

2. Requirements

- **RESPONSIVENESS**
  - ✓ Meets **General Requirements** (see Part I).
  - ✓ Meets **Project Narrative requirements** for the selected *Research Goal* (see Part III).

- **COMPLIANCE** (see [Part V](#))
  - ✓ Includes all **required content** (see [Part V.D](#)).
  - ✓ Includes all **required Appendices** (see [Part V.D](#)).
    - ○ [Appendix A: Dissemination Plan](#) (All applications)
    - ○ [Appendix B: Response to Reviewers](#), (Resubmissions only)
    - ○ [Appendix F: Data Management Plan](#) (Efficacy and Follow-Up or Replication: Efficacy and Effectiveness applications only)
- **SUBMISSION** (see Parts [V](#) and [VI](#))
  - ✓ Submit electronically via Grants.gov no later than **4:30:00 pm**, **Eastern Time**, on **August 23, 2018**.
  - ✓ Use the **correct application package** downloaded from Grants.gov (see [Part V.B](#)).
  - ✓ Include **PDF files** that are **named and saved appropriately** and that are **attached to the proper forms** in the application package (see [Part V.D](#) and [Part VI](#)).

3. Recommendations for a Strong Application

Under each of the Research Goals (see [Part III](#)), the Institute provides recommendations to improve the quality of your application. The peer reviewers are asked to consider these recommendations in their evaluation of your application. The Institute strongly encourages you to incorporate the recommendations into your Project Narrative and relevant appendices.

PART II: TOPIC DESCRIPTIONS AND REQUIREMENTS

A. APPLYING TO A TOPIC

For the FY 2019 Special Education Research Grants program, you **must** submit to 1 of the 14 research and special research topics described in this section.[3] The research topic identifies your field of research.

The Institute's special research topics in FY 2019 are intended to provide additional encouragement for research in under-studied areas that appear promising for improving outcomes for students with disabilities, and are of interest to policymakers and practitioners.

Across all topics, you must meet the requirements outlined in _Part I.B: General Requirements_ for
1) Students With or At Risk for Disabilities
2) Student Outcomes
3) Authentic Education Setting
4) Dissemination

Applicants **must** meet these requirements, as well as the relevant goal requirements listed under Part III: Goal Descriptions and Requirements, in order to be sent forward for scientific peer review.

For each topic, the following pages describe the purpose and Institute-identified research considerations specific to that field, and list the contact information for the Program Officer.

- **See the Purpose section under each topic for topic-specific descriptions of research appropriate for a given topic**. The Institute recommends that you consider the key student outcomes, the grade(s) and age range(s) of target students, and the setting in which the research will be most relevant when choosing a topic.

- **See the Considerations section under each topic for research considerations that the Institute has identified**. The Institute's peer review process is not designed to give preferential treatment to applications that address the issues identified under each topic; rather, the Institute encourages such applications because, if found to have scientific merit by the Institute's independent scientific peer reviewers, they have the potential to lead to important advances in the field.

General considerations across all topics

There are two research considerations that apply to all topic areas. Instead of repeating these considerations in each topic area, they are described below:

- Research to develop and evaluate adaptive interventions is welcomed and encouraged across all topic areas. High-quality adaptive interventions, or individually tailored treatments (e.g., intensifying the interventions for non-responders to the initial intervention) have the potential to improve student outcomes while potentially decreasing the cost and burden of the intervention.

- Multi-Tiered System of Support (MTSS) is a comprehensive framework that provides academic, social, emotional, and behavioral support for all students, and provides resources and supports that teachers and other school personnel need to support these students. Research to understand how to better support students with or at risk for disabilities, particularly those with

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[3] You must identify your chosen topic area on the SF-424 Form (Item 4b) of the Application Package (see Part VI.E.1), or the Institute may reject your application as nonresponsive to the requirements of this RFA.

the most severe disabilities, within MTSS is welcomed and encouraged across all topic areas (e.g., development of Tier 3 interventions that are aligned with instruction and intervention in Tiers 1 and 2).

- ✓ Applications focused on MTSS at a systems or policy level may consider applying to the Research Networks Focused on Critical Problems of Policy and Practice in Special Education program (324N): https://ies.ed.gov/funding/.

The Institute strongly encourages you to contact the relevant Program Officer listed under each topic if you have questions regarding the appropriateness of a particular project for submission under a specific topic.

1. Autism Spectrum Disorders (ASD)

Program Officer: Amy Sussman, Ph.D. (202-245-7424; Amy.Sussman@ed.gov)

a) Purpose

The Autism Spectrum Disorders (ASD) topic supports research on the development, implementation, and evaluation of *comprehensive school-based interventions* (i.e., interventions that directly target, in a coordinated fashion, *multiple* outcomes) intended to improve outcomes for students identified with or at risk for ASD from kindergarten through Grade 12.

According to the Centers for Disease Control and Prevention (2014), 1 in 68 children is classified as having an ASD. 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.

> *Target Population:*
> *Students in Grades K-12*

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

Please note the following about this topic:

- Student outcomes for the ASD topic should measure **two or more** of the following distinct categories: (a) developmental, (b) cognitive, (c) communicative, (d) academic, (e) social/behavioral, or (f) functional outcomes for students with or at risk for disabilities from kindergarten through Grade 12.
    - Applicants proposing research projects intended to ultimately impact only one student outcome, even though that outcome fits more than one category (e.g., a particular social-communication skill), are not appropriate for the Autism topic. Applicants with such projects should consider one of the Institute's other special education research topic areas.

- Investigators studying children with ASD continue to have difficulty obtaining the necessary sample size for large group designs, particularly randomized controlled trials. If you are proposing such a design, you are encouraged to consider various options for ensuring an appropriate sample size, including for example, recruiting participants at multiple sites, and obtaining letters of agreement from schools and districts that explicitly state the number of attending students with ASD who meet your proposed sample requirements.

b) Requirements

Applications under the ASD topic **must** meet the requirements listed in *Part I.B. General Requirements*, as well as the relevant goal requirements listed under *Part III: Goal Descriptions and Requirements*, in order to be sent forward for scientific peer review.

c) Considerations for ASD Research

Through this funding mechanism, the Institute supports field-generated research that meets all requirements outlined in this Request for Applications. The Institute also encourages applicants to consider the research issues listed below. The Institute's peer review process is not designed to give preferential treatment to applications that address these issues; rather, the Institute encourages such applications because, if found to have scientific merit by the Institute's independent, scientific peer reviewers, they have the potential to lead to important advances in the field.

- The field needs development and efficacy testing of comprehensive ASD interventions designed for students in secondary school. There is a relative dearth of research on comprehensive school-based interventions for older children and adolescents with ASD, particularly in the middle school years (Fleury et al., 2014).

- Recent research studies indicate that the rates of mental illness (e.g., anxiety, depression) and suicide are higher among those with ASD than others in the general population. For those with ASD, suicide rates are higher for females than for males and for those without co-morbid learning and intellectual disabilities. Therefore, comprehensive school-based interventions should consider developing or evaluating components related to mental health awareness and suicide prevention.[4]

- Systematic manipulation of intervention content, features (e.g., instructional strategies, frequency, duration), and implementation (e.g., grouping, setting) as well as analyses of mediators and moderators of treatment effects are needed to determine which interventions and intervention components have the best short- and long-term effects for students with ASD.

For more information on this topic and to view the abstracts of previously funded projects, please visit: http://ies.ed.gov/ncser/projects/program.asp?ProgID=42. Please contact the Program Officer for this topic to discuss your choice of topic and goal and to address other questions you may have.

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[4] https://iacc.hhs.gov/meetings/iacc-meetings/2017/full-committee-meeting/october24/.

2. Cognition and Student Learning in Special Education (Cognition)

Program Officer: Katherine (Katie) Taylor, Ph.D. (202-245-6716; Katherine.Taylor@ed.gov)

a) Purpose
The Cognition and Student Learning in Special Education (Cognition) topic supports research that uses cognitive science to develop, implement, and evaluate approaches that are intended to improve education outcomes for students with or at risk for disabilities from kindergarten through Grade 12.

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 long-term outcome of this program will be an array of tools and strategies

> **Target Population:**
> *Students in Grades K-12*

(e.g., assessment tools, programs, services, interventions) that are based on principles of learning and information processing gained from cognitive science and demonstrated effective for improving learning for students with or at risk for disabilities in kindergarten through Grade 12.

Please note the following about this topic:

- Student outcomes for the Cognition topic should focus on academic outcomes (reading, writing, STEM, or study skills) and their underlying cognitive processes for students with or at risk for disabilities from kindergarten through Grade 12.

- Applicants may propose to conduct experimental studies under Goal 1 (Exploration) as long as the purpose is to examine relationships between malleable factors and student education outcomes and/or mediators and moderators of these relationships and not to evaluate an intervention.

b) Requirements
Applications under the Cognition topic **must** meet the requirements listed in *Part I: Overview and General Requirements, B. General Requirements*, as well as the relevant goal requirements listed under *Part III: Goal Descriptions and Requirements,* in order to be sent forward for scientific peer review.

c) Considerations for Cognition Research
Through this funding mechanism, the Institute supports field-generated research that meets all requirements outlined in this Request for Applications. The Institute also encourages applicants to consider the research issues listed below. The Institute's peer review process is not designed to give preferential treatment to applications that address these issues; rather, the Institute encourages such applications because, if found to have scientific merit by the Institute's independent peer reviewers, they have the potential to lead to important advances in the field.

- Collaboration between cognitive scientists and special education researchers is needed to examine the similarities and differences in cognitive processing between students with and without disabilities, to explore explicit links between the underlying cognitive processes and academic outcomes, and to develop interventions based on knowledge of cognitive processing in students with or at risk for disabilities.

- Executive function skills are generally defined as those attention-regulation skills that are necessary for engaging in goal-directed problem solving (Zelazo, Blair, & Willoughby, 2016). Executive function skills, such as cognitive flexibility, working memory, and inhibitory control, are essential for learning and promoting positive social and behavioral outcomes. Many students with or at risk for disabilities demonstrate weaknesses in certain executive functioning skills (e.g., O'Hearn, Asato Ordaz, & Luna, 2008; Swanson, Howard, and Saez, 2006; Toll, Van der Ven,

Kroesbergen, & Van Luit, 2011; Willcutt, Doyle, Nigg, Faraone, & Pennington, 2005). Thus, additional research is needed on the development and evaluation of interventions, including embedding executive function skills training into research-based interventions, intended to improve these skills for students who show signs of impairments in cognitive processes.

- Measures are needed that are valid for testing cognitive processes associated with learning in students with disabilities and/or can be used to assess whether students have or are at risk for a specific type of cognitive impairment.

For more information on this topic and to view the abstracts of previously funded projects, please visit: http://ies.ed.gov/ncser/projects/program.asp?ProgID=53. Please contact the Program Officer for this topic to discuss your choice of topic and goal, and to address other questions you may have.

3. Early Intervention and Early Learning in Special Education (Early Intervention)

Program Officer: Amy Sussman, Ph.D. (202-245-7424; Amy.Sussman@ed.gov)

a) Purpose

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

More than one million infants, toddlers, and young children (birth through 5 years old) receive early intervention or early childhood special education services under IDEA, representing a 17% increase in infants and toddlers and 7% increase in preschoolers over the last 10 years (U.S. Department of Education, 2016). As the population of

> **Target Population:**
> Infants, toddlers, & preschool children

children who receive early intervention services increases, more research is needed to determine the most effective practices, programs, and systems, including assessments for screening and monitoring progress, for improving child outcomes and ultimately success in school.

The Institute supports research on early intervention and early learning practices, curricula, professional development, measurement, and systems-level programs and policies, as well as effective strategies for improving family involvement and family support of their child with or at risk for a disability. 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.

Please note the following about this topic:

- Research in this topic should address the following developmental or school readiness outcomes:
  - Developmental outcomes pertaining to cognitive, communicative, linguistic, social, emotional, adaptive, functional, or physical development
  - School readiness outcomes (i.e., pre-reading, pre-writing, early-STEM [science, technology, engineering, and/or mathematics], or social-emotional skills that prepare young children for school)

- A variety of professionals can deliver interventions including, but not limited to,
  - Early intervention specialists, teachers, school or center-based staff, related services providers (e.g., speech-language pathologists, physical therapists), or other professionals or paraprofessionals who provide services to infants, toddlers, or preschool children with or at risk for disabilities
  - Parents who receive training to deliver interventions to their infant, toddler, or preschool child

- Interventions may be delivered within, or use data collected from, preschools, community settings, or homes.

b) Requirements

Applications under the Early Intervention topic **must** meet the requirements listed in *Part I.B. General Requirements*, as well as the relevant goal requirements listed under *Part III: Goal Descriptions and Requirements,* in order to be sent forward for scientific peer review.

c) Considerations for Early Intervention Research

Through this funding mechanism, the Institute supports field-generated research that meets all requirements outlined in this Request for Applications. The Institute also encourages applicants to consider the research issues listed below. The Institute's peer review process is not designed to give preferential treatment to applications that address these issues; rather, the Institute encourages such applications because, if found to have scientific merit by the Institute's independent peer reviewers, they have the potential to lead to important advances in the field.

- The importance of early mathematics is reflected in the findings indicating that early mathematics knowledge at school entry is the strongest predictor of later achievement, predicting reading as well as math achievement (Claessens, Duncan, & Engel, 2009; Duncan et al., 2007). Children who persistently display mathematics difficulties at both the start and end of kindergarten have the lowest rates of growth in mathematics skills during elementary school (Morgan, Farkas, & Wu, 2009). Compared to research on early language and literacy interventions, the Institute has funded far less research on early mathematics interventions for children at risk for developing learning disabilities. More research is needed in this area to improve the early mathematics skills of young children with or at risk for disabilities.

- There is a growing literature base on promising interventions developed to improve developmental and school readiness outcomes for young children with or at risk for disabilities, yet many of those have not yet been rigorously tested. There are also practices currently in wide use that lack any rigorous evidence of impact. The field would benefit from additional rigorous evaluations of existing interventions for young children with or at risk for disabilities, with results of impact (or lack thereof) widely disseminated to relevant stakeholders, including educators, administrators, and policymakers.

- In 2014, the Department of Education and Department of Health and Human Services Early Learning Interagency Policy Board released a joint Policy Statement on Inclusion of Children With Disabilities in Early Childhood Programs, which provides recommendations to education agencies and early childhood programs for increasing the inclusion of infants, toddlers, and preschool children with disabilities in high-quality early childhood programs. However, additional rigorous research is needed to better understand the impacts of inclusion in early childhood programs. For example, there is a need to understand whether the benefits vary for different children (e.g., depending on the type of disability) and, if they do, what aspects of inclusive settings benefit which children, what practices best support children with disabilities in inclusive classrooms, and how to best implement inclusive practices and policies at the system level.

For more information on this topic and to view the abstracts of previously funded projects, please visit: http://ies.ed.gov/ncser/projects/program.asp?ProgID=27. Please contact the Program Officer for this topic to discuss your choice of topic and goal, and to address other questions you may have.

4. Families of Children with Disabilities (Families)

Program Officer: Jacquelyn Buckley, Ph.D. (202-245-6607; Jacquelyn.Buckley@ed.gov)

a) Purpose

The Families of Children with Disabilities (Families) topic supports research that contributes to the identification of effective strategies for families and/or school personnel to improve family involvement for children with or at risk for disabilities in ways that improve education outcomes for these students from kindergarten through Grade 12.

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. The majority of this literature, however, focuses on students without disabilities. When studies do examine parent involvement and students with disabilities, the work often focuses on IDEA legally mandated activities, such as participation in IEP meetings (Goldman & Burke, 2016). Students with disabilities, however, may require a greater degree of parental involvement and more active engagement than their peers without disabilities. Little is known, for example, about effective strategies for increasing the involvement of parents of children with disabilities in ways that improve the education, social, behavioral, functional, or transition outcomes of children with disabilities. In addition, little is known about effective strategies and the professional development needed for teachers and other educational personnel to support the involvement of parents of children with disabilities in ways that improve the outcomes of children with disabilities.

> **Target Population:**
> *Students in Grades K-12*

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 education or transition outcomes of students with disabilities from kindergarten through Grade 12.

Please note the following about this topic:

- Student outcomes for the Families topic can address a range of student education outcomes for students in kindergarten through Grade 12. 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) as well as social, emotional, and behavioral outcomes that support learning.

b) Requirements

Applications under the Families topic **must** meet the requirements listed in *Part I.B. General Requirements*, as well as the relevant goal requirements listed under *Part III: Goal Descriptions and Requirements,* in order to be sent forward for scientific peer review.

c) Considerations for Families Research

Through this funding mechanism, the Institute supports field-generated research that meets all requirements outlined in this Request for Applications. The Institute encourages applicants to consider the research issues listed below. The Institute's peer review process is not designed to give preferential treatment to applications that address these issues; rather, the Institute encourages such applications because, if found to have scientific merit by the Institute's independent peer reviewers, they have the potential to lead to important advances in the field.

- Theoretical conceptualizations of parent involvement and participation have changed over time, but in general refer to active participation of parents in all aspects of their child's social,

emotional, and academic development (e.g., Castro et al., 2015). Although these conceptualizations generally apply to families with disabilities, students with disabilities may require a greater degree of parental involvement and more active engagement and advocacy than their peers without disabilities. Parents of a student with a disability may also experience additional stressors and/or have a different dynamic engaging with the school. Models of parental involvement should be examined related to the applicability of these models for parents of students with disabilities, and importantly, disentangle whether there are specific factors that compose "parent involvement" for parents of students with disabilities and examine their influence on student outcomes.

- Teachers are expected to effectively work with families and promote family involvement in their child's education. More research is needed to understand the critical skills teachers need to implement effective practices to engage families, professional development models to teach those skills and practices, and ongoing school-level systems of support (e.g., school-wide engagement policies) for teachers to engage parents.

- Research on family involvement would benefit from examining involvement by disability category (e.g., participation practices of parents of students with low- vs. high-incidence disabilities). Results of this research would be beneficial for parents and practitioners to better understand how to increase quality and quantity of parent involvement which may naturally vary as a result of child disability type and/or severity. Efforts to increase parent–school communication for a student with a severe intellectual disability for example, may differ from that for a student with a learning disability. A better understanding of potential nuances in engagement would help teachers to better target and align family involvement efforts with needs of the families.

For more information on this topic and to view the abstracts of previously funded projects, please visit: http://ies.ed.gov/ncser/projects/program.asp?ProgID=73. Please contact the Program Officer for this topic to discuss your choice of topic and goal, and to address other questions you may have.

5. Professional Development for Teachers and School-Based Service Providers (Professional Development)

Program Officer: Katherine (Katie) Taylor, Ph.D. (202-245-6716; Katherine.Taylor@ed.gov)

a) Purpose

The Professional Development for Teachers and School-Based Service Providers (Professional Development) topic supports research that contributes to the identification of effective strategies for improving the knowledge and skills of teachers and school-based service providers (e.g., related services providers) in ways that improve the educational outcomes of students with or at risk for disabilities from kindergarten through Grade 12.[5]

Recent calls from education researchers indicate a need for additional research on teachers, related services providers, and other school-based personnel (e.g., Sindelar, Brownell, & Billingsley, 2010), especially in the field of special education, where improved training and professional development may be essential in closing the research-to-practice gap (Boardman, Argüelles, Vaughn, Hughes, & Klingner, 2005; Klingner, Ahwee, Pilonieta, & Menendez, 2003;

> **Target Population:**
> *Teachers and School-based Service Providers for Students in Grades K-12*

McLeskey & Billingsley, 2008). We know, for example, that most students with disabilities (95%) are educated in general education classrooms for at least some portion of their school day, with more than half of all students with disabilities (61%) educated in the general education classroom for most of the school day (Snyder & Dillow, 2015). Yet, according to the last Schools and Staffing Survey (U.S. Department of Education, 2013), nearly two-thirds of public school teachers had not received professional development related to teaching students with disabilities in the past year. In addition, teachers are often unprepared to effectively support and supervise paraprofessionals working with students with disabilities, in spite of an increasing reliance on paraprofessionals in general education classrooms (Drecktrah, 2000; French, 2001; Wallace, Shin, Bartholomay, & Stahl, 2001).

Under the Professional Development topic, the Institute intends to fund research related to in-service training, tools, and other supports provided to current teachers and a range of other school-based service providers (e.g., social workers, school psychologists, speech-language pathologists, behavioral interventionists, physical therapists). The Institute is also interested in exploratory, development, and measurement research targeting pre-service teachers. The long-term outcome of the Professional Development program will be an array of tools and strategies (e.g., assessment tools, programs, teacher supports) that have been demonstrated to be effective for improving and assessing the performance of teachers and school-based service providers in ways that are linked to improvements in student outcomes.

Please note the following about this topic:

- Student outcomes for the Professional Development topic should address reading, writing, STEM (science, technology, engineering, and/or mathematics), social and behavioral, functional and adaptive, transition, or general study skills outcomes for students with or at risk for disabilities from kindergarten through Grade 12.

- Research on teacher preparation (pre-service training and experience) **may only be** submitted under the Exploration, Development and Innovation, and Measurement goals. Teacher preparation research submitted under the Efficacy and Follow-Up or Replication: Efficacy and

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[5] 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.

[Effectiveness](#) goals will be considered nonresponsive and will not be sent forward for scientific peer review.

b) Requirements

Applications under the Professional Development topic **must** meet the requirements listed in *Part I: Overview and General Requirements, B. General Requirements*, as well as the relevant goal requirements listed under *Part III: Goal Descriptions and Requirements*, in order to be sent forward for scientific peer review.

c) Considerations for Professional Development Research

Through this funding mechanism, the Institute supports field-generated research that meets all requirements outlined in this Request for Applications. The Institute also encourages applicants to consider the research issues listed below. The Institute's peer review process is not designed to give preferential treatment to applications that address these issues; rather, the Institute encourages such applications because, if found to have scientific merit by the Institute's independent peer reviewers, they have the potential to lead to important advances in the field.

- In order to meet the needs of students with disabilities in general education classrooms, schools have implemented models of collaboration between teachers, related services providers, and other instructional personnel and have increasingly relied on paraprofessionals for additional support. More research is needed to identify the knowledge and skills that these school staff need to collaborate and improve student outcomes as well as the professional development programs that are related to improved knowledge and skills and student outcomes.

- Ineffective classroom behavior management practices can interfere with a teacher's ability to effectively provide instruction and with other students' ability to learn. Although much is known about effective classroom behavior management strategies, many teachers do not receive training and support in this area, particularly for addressing the needs of students with the most significant behavior problems (e.g., Cassady, 2011; Oliver & Reschly, 2007; Oliver, Wehby, & Daniel, 2011). More research is needed to understand the critical competencies teachers need to implement effective behavioral practices in the classroom, as well as professional development models to teach those competencies.

- Relatively little is known about key features of preservice teacher training programs (e.g., special focus on STEM instruction) that are related to academic outcomes for students with or at risk for disabilities. Exploration research in this area is encouraged to gain a better understanding of the aspects of preservice teacher programs that may show promise for improving student academic outcomes.

For more information on this topic and to view the abstracts of previously funded projects, please visit: http://ies.ed.gov/ncser/projects/program.asp?ProgID=51. Please contact the Program Officer for this topic to discuss your choice of topic and goal, and to address other questions you may have.

6. Reading, Writing, and Language Development (Reading/Language)

Program Officer: Sarah Brasiel, Ph.D. (202-245-6734; Sarah.Brasiel@ed.gov)

a) Purpose
The Reading, Writing, and Language Development (Reading/Language) topic supports research that improves reading, writing, and language skills of students with or at risk for disabilities from kindergarten through Grade 12.

Compared to their peers without disabilities, students with disabilities continue to struggle in reading. For example, in the 2017 National Assessment of Educational Progress (NAEP) reading assessment, 68 percent of Grade 4 students with disabilities who participated in the assessment scored below the basic level

> **Target Population:**
> *Students in Grades K-12*

compared to 27 percent of students without disabilities. In Grade 8, 61 percent of students with disabilities scored below the basic level compared to 19 percent of students without disabilities. There are similar needs in the area of writing. In the 2011 NAEP writing assessment, 60 percent of 8th graders with disabilities who participated in the assessment scored below the basic level compared with 20 percent of students without disabilities. In Grade 12, 62 percent of students with disabilities scored below the basic level compared to 21 percent of students without disabilities.

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 reading, writing, or language outcomes for students with or at risk for disabilities from kindergarten through Grade 12.

Please note the following about this topic:

- Student outcomes for the Reading/Language topic should address pre-reading, reading, pre-writing, writing, or language outcomes for students with or at risk for disabilities from kindergarten through Grade 12.

b) Requirements
Applications under the Reading/Language topic **must** meet the requirements listed in *Part I: Overview and General Requirements, B. General Requirements*, as well as the relevant goal requirements listed under *Part III: Goal Descriptions and Requirements,* in order to be sent forward for scientific peer review.

c) Considerations for Reading/Language Research
Through this funding mechanism, the Institute supports field-generated research that meets all requirements outlined in this Request for Applications. The Institute also encourages applicants to consider the research issues listed below. The Institute's peer review process is not designed to give preferential treatment to applications that address these issues; rather, the Institute encourages such applications because, if found to have scientific merit by the Institute's independent peer reviewers, they have the potential to lead to important advances in the field.

- Research is needed in the area of writing, especially at the secondary level for students with disabilities. A recent IES technical working group focused on writing in the secondary grades highlighted the significant need for high-quality writing assessments, such as assessments to be used to evaluate the effects of writing interventions as well as assessments for teachers to use in reviewing and providing feedback on student writing assignments (https://ies.ed.gov/ncer/whatsnew/techworkinggroup/pdf/WritingTWG.pdf).

- In 2012, the Braille Authority of North America (BANA) adopted Unified English Braille (UEB), which put into motion changes in curricula and assessment across the United States. Each state and jurisdiction is determining the plan and timeline for the transition from the current English Braille American Edition to UEB for their students and instructional personnel. Research is needed to develop and test interventions to support students as they transition to this new braille code, including resources and professional development for teachers of students with visual impairment.

- Although there is a substantial research base on effects of interventions for students with or at risk for disabilities in the areas of reading and spelling, most are for students in Grades 2-5 (Williams, Walker, Vaughn, & Wanzek, 2017). Development and evaluation of reading interventions are needed for secondary students with learning disabilities (e.g., including spelling as a component of a reading intervention for students in middle and high school).

For more information on this topic and to view the abstracts of previously funded projects, please visit: http://ies.ed.gov/ncser/projects/program.asp?ProgID=43. Please contact the Program Officer for this topic to discuss your choice of topic and goal, and to address other questions you may have.

7. Science, Technology, Engineering, and Mathematics (STEM) Education

Program Officer: Sarah Brasiel, Ph.D. (202-245-6734; Sarah.Brasiel@ed.gov)

a) Purpose

The Science, Technology, Engineering, and Mathematics (STEM) Education topic supports research that contributes to the improvement of science, technology, engineering, and mathematics outcomes for students with or at risk for disabilities from kindergarten through Grade 12. Since 2002, the Institute has supported rigorous, scientific research in mathematics and science that is relevant to education practice and policy (see Compendium of Math and Science Research Funded by NCER and NCSER: 2002-2013). However, critical questions remain on how best to support students with disabilities in these areas. In addition, research on the other two domains of STEM, technology and engineering education, has been minimal for students with disabilities. Through the formal introduction of technology and engineering into this year's Special Education Research Grants program, the Institute encourages research focusing on improving student education outcomes across one or more of the four domains of STEM education.

Students with disabilities lag behind their peers without disabilities in both mathematics and science achievement. For example, in the 2017 National Assessment of Educational Progress (NAEP) mathematics assessment, 69 percent of Grade 8 students with disabilities who participated in the assessment scored below the basic level compared to 25 percent of students without disabilities.

> **Target Population:**
> *Students in grades K-12*

In the 2015 NAEP science assessment, 66 percent of Grade 8 students with disabilities who participated in the assessment scored below the basic level in the science assessment compared to 28 percent of Grade 8 students without disabilities. There is a new NAEP assessment in Technology and Engineering Literacy (TEL) that measures whether students are able to apply technology and engineering skills to real-life situations. It was administered to Grade 8 students for the first time in 2014, and students with disabilities who participated in the assessment scored significantly lower than students without disabilities (116 compared to 155).

Through this topic, the Institute is primarily interested in research that addresses core science, technology, engineering, and/or mathematics content. 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 demonstrated to be effective for improving student learning and achievement for students with or at risk for disabilities from kindergarten through Grade 12 in STEM.

Please note the following about this topic:

- Student outcomes for the STEM Education topic should focus on student learning in science, technology, engineering, and/or mathematics for students with or at risk for disabilities from kindergarten through Grade 12.

b) Requirements

Applications under the STEM Education topic **must** meet the requirements listed in *Part I: Overview and General Requirements, B. General Requirements*, as well as the relevant goal requirements listed under *Part III: Goal Descriptions and Requirements,* in order to be sent forward for scientific peer review.

c) Considerations for STEM Education Research

Through this funding mechanism, the Institute supports field-generated research that meets all requirements outlined in this Request for Applications. The Institute also encourages applicants to consider the research issues listed below. The Institute's peer review process is not designed to give preferential treatment to applications that address these issues; rather, the Institute encourages such

applications because, if found to have scientific merit by the Institute's independent peer reviewers, they have the potential to lead to important advances in the field.

- The National Research Council (2013) identified three goals to improve STEM Education in America, with the first goal being access to quality STEM learning. They also identified high priority indicators such as time for science in Grades K-5. Little is known about access to quality STEM learning opportunities for students with disabilities, especially in technology and engineering, which are not always included in state standards and assessments. Exploratory research is needed to understand the STEM opportunities accessible for students with disabilities and malleable factors (e.g., teacher attitudes, peer tutors, accessible laboratories, universal design for learning) related to successful engagement and STEM learning for students with disabilities.

- Students with visual and hearing impairments can find sensory-based STEM curricula and experiences challenging (Gottfried, Bozick, Rose & Moore, 2016; Moon, Todd, Morton, & Ivey, 2012; Vosganoff, Paatsch, & Toe, 2011). Additional research is needed to improve access to STEM curricula for students with disabilities. For example, according to the findings from the 2011 High School Transcript Study (Nord et al., 2011), of the students with disabilities who did not complete the standard curriculum for graduation, almost half were missing only science credits. Development of curricula and assessments and appropriate accommodations are needed to improve access to STEM curricula for students with disabilities, including access to advanced STEM courses (e.g., Computer Science courses).

- As Multi-Tiered Systems of Support become more prevalent, there is an increased demand for accurate screening measures to determine risk. Research is needed to develop and refine valid group-administered assessments, computer-adaptive assessments, and approaches that combine measures to improve accuracy of risk determination in mathematics (Chard, et al., 2005; Clemens, Keller-Margulis, Scholten, & Yoon, 2016). These screening measures and approaches are needed especially for secondary students in areas where valid measures are less common (e.g., mathematical concepts of geometry and measurement). Research is also needed to develop and test interventions for secondary students once they are identified.

For more information on this topic and to view the abstracts of previously funded mathematics and science projects, please visit: http://ies.ed.gov/ncser/projects/program.asp?ProgID=30. Please contact the Program Officer for this topic to discuss your choice of topic and goal, and to address other questions you may have.

8. Social and Behavioral Outcomes to Support Learning (Social/Behavioral)

Program Officer: Jacquelyn Buckley, Ph.D. (202-245-6607; Jacquelyn.Buckley@ed.gov)

a) Purpose
The Social and Behavioral Outcomes to Support Learning (Social/Behavioral) topic supports research that contributes to the prevention or amelioration of behavior problems in students with or at risk for disabilities in kindergarten through Grade 12 and, concomitantly, improves their education outcomes.

Behavior problems continue to be a concern for school staff and parents of students with and at risk for disabilities. Many students have difficulty managing the challenges of development and exhibit behavioral and psychological problems. In particular, youth with

> *Target Population:*
> *Students in Grades K-12*

disabilities can experience mental health issues that interfere with academic success, and often create a negative learning environment (e.g., Nyre, Vernberg, Roberts, 2007; Rones & Hoagwood, 2000). Teachers also repeatedly identify inappropriate student behavior as one of the greatest challenges to effective teaching (New Teacher Project, 2013).

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, and social skills, and, likewise, the academic performance of students with or at risk for disabilities from kindergarten through Grade 12.

Please note the following about this topic:

- Student outcomes for the Social/Behavioral topic should address student social, emotional, and behavioral outcomes that support learning *and* student education outcomes for students in kindergarten through Grade 12. 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).

- A variety of individuals can deliver interventions including, but not limited to,
  - Teachers, school psychologists, related services providers, other school-based or school-affiliated staff (e.g., clinical psychologists working with a school district, school nurses)
  - Parents or service delivery professionals who are implementing the school-based intervention in another setting (e.g., home settings, residential treatment programs)

b) Requirements
Applications under the Social/Behavioral topic **must** meet the requirements listed in *Part I.B. General Requirements*, as well as the relevant goal requirements listed under *Part III: Goal Descriptions and Requirements*, in order to be sent forward for scientific peer review.

c) Considerations for Social/Behavioral Research
Through this funding mechanism, the Institute supports field-generated research that meets all requirements outlined in this Request for Applications. The Institute also encourages applicants to consider the research issues listed below. The Institute's peer review process is not designed to give preferential treatment to applications that address these issues; rather, the Institute encourages such applications because, if found to have scientific merit by the Institute's independent peer reviewers, they have the potential to lead to important advances in the field.

- There continues to be a need for research that integrates the disciplines of special education and mental health with the goal of preventing school-based 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 continues to be a need to bridge such efforts with prevention and intervention research in special education, particularly evaluating the impact of these programs on school-based behavior and academic outcomes, including referral and classification for special education.

- Research is needed to understand the interplay among internalizing disorders (e.g., anxiety), externalizing disorders (e.g., disruptive behavior), and educational difficulties. Although externalizing problems likely account for the majority of identified children's mental health problems, internalizing problems can co-occur in children. A more comprehensive understanding of the relationship between both types of problems is needed, along with the subsequent development of interventions that can support students with these disorders in school. The extant literature on the link between mental health symptoms and educational difficulties suggests that the early treatment of internalizing, externalizing, and learning problems has important educational and mental health implications (Reddy, Newman, De Thomas, & Chun, 2009).

- Students with disabilities may be at an increased risk of being bullied as well as becoming a perpetrator of bullying, relative to their peers without disabilities (e.g., Blake, Lund, Zhou, Kwok, & Benz, 2012; Rose, Monda-Amaya, & Espelage, 2011). More research is needed to understand the bullying dynamic as it relates to students with disabilities, whether and how that varies for example, by disability type and/or severity, and whether there are protective and risk factors that maintain or prevent victimization and perpetration. In addition, more research is needed to understand how to develop effective and efficient bullying prevention programs.

For more information on this topic and to view the abstracts of previously funded projects, please visit: http://ies.ed.gov/ncser/projects/program.asp?ProgID=56. Please contact the Program Officer for this topic to discuss your choice of topic and goal, and to address other questions you may have.

9. Special Education Policy, Finance, and Systems (Policy/Systems)

Program Officer: Katherine (Katie) Taylor, Ph.D. (202-245-6716; Katherine.Taylor@ed.gov)

a) Purpose

The Special Education Policy, Finance, and Systems (Policy/Systems) topic supports research that contributes to the identification of systemic processes, procedures, and programs that improve the education outcomes for students with or at risk for disabilities from kindergarten through Grade 12.

Intervention and education for students with disabilities typically require the coordination of a variety of programs and services; however, our understanding of the impact of various systemic or organizational strategies on student outcomes is limited. Through the Policy/Systems program, the Institute supports research to

> *Target Population:*
> *Students in Grades K-12*

improve outcomes for students with 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 practices and policies (e.g., organizational strategies, financial and management practices) that are intended to improve the management, coordination, and implementation of systemic programs and services in ways that directly enhance the overall education environment, and indirectly improve student outcomes.

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 environment and thereby improving outcomes for students with or at risk for disabilities from kindergarten through Grade 12.

Please note the following about this topic:

- Student outcomes for the Policy/Systems topic should address reading, writing, STEM (science, technology, engineering, and/or mathematics), social and behavioral, functional and adaptive, transition, or general study skills outcomes for students with disabilities or at risk for disabilities from kindergarten through Grade 12.

b) Requirements

Applications under the Policy/Systems topic **must** meet the requirements listed in *Part I.B. General Requirements*, as well as the relevant goal requirements listed under *Part III: Goal Descriptions and Requirements,* in order to be sent forward for scientific peer review.

c) Considerations for Policy/Systems Research

Through this funding mechanism, the Institute supports field-generated research that meets all requirements outlined in this Request for Applications. The Institute also encourages applicants to consider the research issues listed below. The Institute's peer review process is not designed to give preferential treatment to applications that address these issues; rather, the Institute encourages such applications because, if found to have scientific merit by the Institute's independent peer reviewers, they have the potential to lead to important advances in the field.

- Questions remain as to the most effective and efficient allocation of resources for educating students with and at risk for disabilities. The Institute encourages research that explores meaningful links among special education financing and expenditures, allocation of resources, student skill level or disability, and improvements in student outcomes. This research could include analysis of existing state- or district-level data or new data collection.

- Many states are currently implementing or planning to implement school choice programs that allow parents to choose an appropriate educational setting for their child. School choice programs

come in multiple forms (e.g., school vouchers, education savings accounts, tax-credit scholarships, open enrollment) and vary in terms of whether they include public and private schools or public schools only. Although interest around and implementation of choice programs is growing, questions remain about the opportunities and challenges these programs present for students with or at risk for disabilities (e.g., Drame, 2011; Howe & Welner, 2002; Lange, & Ysseldyke, 1998; Rhim & McLaughlin, 2007; Wolf, 2011). For example, additional research is needed to better understand how and why students with or at risk for disabilities engage in choice programs, the services and supports choice programs provide for these students, and the impact of choice programs on student education outcomes.

- Consistent shortages in fully certified special education teachers have been and continue to be present across the U.S. (e.g., U.S. Department of Education, 2017). As a result, there has been a rise in programs offering alternative routes to certification (ARC). Such programs streamline the certification process and allow administrators to fill open positions more quickly (e.g., McLeskey & Billingsley, 2008; Rosenberg & Sindelar, 2005). Relatively little is known, however, about how ARC in special education is related to education outcomes for students with or at risk for disabilities. Researchers are encouraged to explore how these different routes to certification compare to each other and to traditional teacher certification in terms of their relation to student outcomes.

- Understanding and reducing racial and ethnic disproportionality in special education for students continues to be a struggle for educators (e.g., Morgan, Farkas, Hillemeier, & Maczuga, 2017; Skiba et al., 2008; Sullivan, 2011). Additional research is needed to advance our understanding of and effective interventions for reducing inequalities in special education.

- The Every Student Succeeds Act (ESSA) graduation accountability requirements allow states to include a diploma option for students with significant cognitive disabilities who participate in alternate assessments based on alternate achievement standards (AA-AAS). States are working to develop state-defined alternate diplomas that meet the requirements outlined in ESSA; in particular, requirements that the diploma be standards-based and be aligned with State requirements for the regular high school diploma. Research is needed to support states in this effort. For example, research is needed to further understand the interventions and supports needed to provide access to grade-level content for students with significant cognitive disabilities, the rigorous instruction required to ensure students meet those content standards, and the professional development necessary for teachers to acquire the knowledge and skills to support students in achieving standards.

For more information on this topic and to view the abstracts of previously funded projects, please visit: http://ies.ed.gov/ncser/projects/program.asp?ProgID=54. Please contact the Program Officer for this topic to discuss your choice of topic and goal, and to address other questions you may have.

10. Technology for Special Education (Technology)

Program Officer: Sarah Brasiel, Ph.D. (202-245-6734; Sarah.Brasiel@ed.gov)

a) Purpose
The Technology for Special Education (Technology) topic supports research on education technology tools that are designed to improve outcomes for students with or at risk for disabilities from kindergarten through Grade 12.

Through the Technology research program, the Institute supports research on a wide array of special education technology products that are intended (a) to improve academic knowledge and skills for students with or at risk for disabilities from kindergarten through Grade 12 or (b) to assess student learning. 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.

> *Target Population:*
> *Students in Grades K-12*

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.

Please note the following about this topic:

- Student outcomes for the Technology topic should address reading, writing, STEM (science, technology, engineering, and/or mathematics), social and behavioral, functional and adaptive, transition, or general study skills outcomes for students with disabilities or at risk for disabilities from kindergarten through Grade 12.

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

b) Requirements
Applications under the Technology topic **must** meet the requirements listed in *Part I: Overview and General Requirements, B. General Requirements*, as well as the relevant goal requirements listed under *Part III: Goal Descriptions and Requirements,* in order to be sent forward for scientific peer review.

c) Considerations for Technology Research
Through this funding mechanism, the Institute supports field-generated research that meets all requirements outlined in this Request for Applications. The Institute also encourages applicants to consider the research issues listed below. The Institute's peer review process is not designed to give preferential treatment to applications that address these issues; rather, the Institute encourages such applications because, if found to have scientific merit by the Institute's independent peer reviewers, they have the potential to lead to important advances in the field.

- There is a need for research on the professional development necessary to support teachers' understanding of the features of technology that support learning and how to best integrate technology into their instruction (Davies & West, 2014; Gray, Thomas, & Lewis, 2010). For example, professional development focused on universal design for learning could be purposefully designed to include technology to make learning accessible to students with disabilities included in a general education science, history, language arts, or mathematics class.

- There is little research on effective ways to use mobile technology to support students with disabilities. For example, a recent meta-analysis of research on mobile devices and students with disabilities found that there was promise for use of mobile technology to improve literacy and

transition outcomes for students with disabilities (Cumming, & Rodríguez, 2017), but called for more research in this area to understand effects of mobile technology for a variety of student education outcomes. Exploratory research is also needed to better understand malleable factors (e.g., teacher knowledge of universal design for learning, teacher integration of technology into pedagogy) related to the use of mobile devices for improving outcomes for students with different types of disabilities at different ages that could inform the development of mobile technology interventions.

- Coordination and communication between schools and other settings for students who move between alternative education settings and their home school (school district) can be challenging. Technology may provide solutions to improve communication and coordination among the systems responsible for students and ensure the successful transition of these youth. Technology could improve seemingly simple processes such as tracking student records for timely access to critical student information. Technology could also be used to support students during this transition when students are likely in need of academic and behavioral support (Alter, 2012; Bowman-Perrot et al., 2007; Lee et al., 2012; Mastropieri et al., 2009; Ramsey et al., 2010; Schwab, Johnson, Ansley, Houchins, & Varjas, 2016). For example, technology could be used to communicate student progress towards IEP goals, with specific information about the intervention last used, specific content covered, and progress monitoring information to guide the new instructor in supporting the student's learning when they transition to the next education setting.

For more information on this topic and to view the abstracts of previously funded projects, please visit: http://ies.ed.gov/ncser/projects/program.asp?ProgID=74. Please contact the Program Officer for this topic to discuss your choice of topic and goal, and to address other questions you may have.

11. Transition Outcomes for Secondary Students with Disabilities (Transition)

Program Officer: Jacquelyn Buckley, Ph.D. (202-245-6607; Jacquelyn.Buckley@ed.gov)

a) Purpose

The Transition Outcomes for Secondary Students with Disabilities (Transition) topic supports research that contributes to the improvement of transition outcomes of secondary students with disabilities.

Despite more than two decades of federal legislation regarding transition, youth with disabilities continue to demonstrate poorer secondary and post-secondary outcomes than their peers without disabilities. For example, according to reports from the National Longitudinal Transition Study-2, youth with disabilities were 10

> **Target Population:**
> *Students in Grades 6-12*

times more likely than their peers without disabilities to earn a high school grade point average below 1.25 (on a scale of 1 to 4) (Newman et al., 2011) and after high school were significantly less likely to be engaged in postsecondary education, job training, or employment (Sanford et al., 2011). Two recently released reports from the National Longitudinal Transition Study 2012 provided similar information for a new cohort of students. Overall, youth with an IEP feel positive about school but are more likely than their peers to struggle academically and to lag behind in taking key steps towards enrolling in postsecondary education or obtaining employment after high school (Lipscomb et al., 2017).

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.

Please note the following about this topic:

- Student outcomes for the Transition topic can include multiple measures of transition outcomes. By transition outcomes, the Institute means those behavioral, social, communicative, functional, occupational, and academic skills[6] 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).
    - Whenever possible and appropriate, research should directly measure post-high school outcomes of interest including, for example, post-high school employment and earnings outcomes (e.g., hours of employment, job stability, wages and benefits), postsecondary education (e.g., attendance, persistence, performance, completion), or independent living.

- Student samples should focus on secondary (middle or high school) students.
    - Students who are 18 years or older *and are still receiving services under IDEA* may be included in the sample.
    - Your sample may include students at the post-secondary level *if the purpose is to improve services and interventions provided* **at the secondary level** (i.e., you may collect data from recent high school graduates to inform the development or assess the impact of school- or community-based transition programs or practices).
    - Note: If your project focuses on postsecondary education, you must apply to the *Postsecondary and Adult Education* topic in the Education Research Grants competition (305A). If your project focuses on transition outcomes that are specific to career and

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[6] Academic skills include general academic content-area skills and basic academic skills. 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).

technical education (CTE), then you should apply to the CTE special research topic in this RFA.

b) Requirements

Applications under the Transition topic **must** meet the requirements listed in *Part I.B. General Requirements*, as well as the relevant goal requirements listed under *Part III: Goal Descriptions and Requirements,* in order to be sent forward for scientific peer review.

c) Considerations for Transition Research

Through this funding mechanism, the Institute supports field-generated research that meets all requirements outlined in this Request for Applications. The Institute also encourages applicants to consider the research issues listed below. The Institute's peer review process is not designed to give preferential treatment to applications that address these issues; rather, the Institute encourages such applications because, if found to have scientific merit by the Institute's independent peer reviewers, they have the potential to lead to important advances in the field.

- A gap continues to exist between post-high school outcomes for students with disabilities and their peers without disabilities (e.g., Lipscomb et al., 2017). Although many research-based practices in transition have been identified to date to alleviate this gap (e.g., employment while in high school), they are largely based on correlational studies (Mazzotti et al., 2016). Additional research is needed to identify the most effective practices and programs used in secondary school that result in successful transition from high school to work settings, independent living, or further education and training. In particular, research is needed to better understand for whom and under what conditions these practices are effective.

- Transition planning starting at an earlier age can be beneficial for improving successful transitions (Cimera, Burgess, & Bedesem, 2014). Additional efforts should be made to develop or enhance programs focused on transition in middle school. Results of this research would be beneficial for parents and practitioners to understand, for example, whether there are critical windows of skill development (e.g., self-advocacy, self-regulation, goal setting) that impact student transition success, and how this can vary by type and severity of disability.

- Research on cross-agency collaborations and partnerships between secondary schools and community service providers, industry, and local businesses to promote more positive transition outcomes is encouraged, including the practices that impede or facilitate the use of existing research-based practices (Flowers et al., 2017).

For more information on this topic and to view the abstracts of previously funded projects, please visit: https://ies.ed.gov/ncser/projects/program.asp?ProgID=45. Please contact the Program Officer for this topic to discuss your choice of topic and goal, and to address other questions you may have.

12. Special Topic: Career and Technical Education for Students with Disabilities (CTE)

Program Officer: Jacquelyn Buckley, Ph.D. (202-245-6607; Jacquelyn.Buckley@ed.gov)

a) Purpose

The Career and Technical Education (CTE) special research topic supports research that contributes to the improvement of secondary and post-secondary transition outcomes (i.e., outcomes important for students to obtain and hold meaningful employment, live independently, and obtain further training and education) for students with or at risk for disabilities in secondary school. Formerly called *vocational education*, CTE comprises training at the secondary and postsecondary levels in the academic, technical, and employability skills and knowledge required for specific occupations. Through this special research topic, the Institute seeks to fund research that focuses specifically on *students with disabilities in secondary school* and their experiences in Grades 6-12 CTE programs, as well as the policies, programs, and practices that result in increases in career readiness skills and transition outcomes from high school to work settings, independent living, or further education and training.

CTE has been increasingly proposed and funded by lawmakers and education policymakers as a way to improve high school students' career readiness prior to graduating from high school. A variety of CTE courses are available to students, and a majority (85%) of public high school graduates participate in CTE (i.e., take one or more credits in any CTE program area). Students with disabilities,

> *Target Population:*
> *Students in Grades 6-12*

however, are more likely to have concentrated in CTE courses (i.e., earn a larger number of credits in a single CTE field) than students with no reported disability; 27 vs. 18 percent, respectively (U.S. Department of Education, 2014). Concentrated CTE coursework may have positive impacts for students' post-school success. For example, for students with emotional and behavioral disorders, concentrated CTE coursework was associated with higher odds of obtaining full-time employment in the first 2 years after high school (Wagner et al., 2017).

Despite higher levels of concentrated participation in CTE, overall, students with disabilities continue to lag behind their peers without disabilities with regard to post-high school education and career outcomes (e.g., Lipscomb et al., 2017). Understanding these lags requires an understanding of the many different features of CTE programs (e.g., occupational concentrations, modes of delivery, instruction), student participation in and experience with CTE programs, as well as the relationship between these aspects of CTE to students' postsecondary outcomes for students with disabilities (Visher & Stern, 2015). In addition, more work is needed to understand whether and how predictors of positive post-school outcomes, such as type of CTE participation, may differ by subgroups of students with disabilities. The needs of students with intellectual disabilities, for example, may differ than those with a learning disability, and these differences are important to understand to better serve specific subgroups of students with disabilities.

In addition, there is little consensus about what it means for a student to be "career ready" or how to measure these skills well. CTE instruction, the metrics for student performance, and student academic, technical, and employment outcomes vary considerably. Finally, CTE curricula are often not aligned well between the secondary standards and postsecondary education systems, nor are curricula aligned with the often changing requirements of labor markets (U.S. Department of Education, 2012). This is a critical gap given the sole purpose of CTE is to prepare students, across the continuum of education, with the knowledge and skills needed for successful employment.

Please note the following about this topic:

- Student outcomes for the CTE special research topic may include multiple measures of transition and post-secondary outcomes. By **transition outcomes**, the Institute means those behavioral, social, communicative, functional, occupational, and academic skills[7] that enable youth and young adults with disabilities to obtain and hold meaningful employment, live independently, and obtain further training and education (e.g., postsecondary vocational education programs, college). Specifically, outcomes may include:
  - *general and special education transition outcomes* in secondary school that are important to students, parents, teachers, and school administrators (e.g., transition planning including setting goals, participation in the IEP process, work-based learning, employment);
  - *academic and achievement outcomes* in CTE and general academic areas including, but not limited to grades, test scores, persistence, completion (e.g., alternate diplomas, graduation rates);
  - *social, emotional, and behavioral outcomes* that support learning and transition after high school (e.g., social skills, self-determination, self-regulation);
  - *postsecondary outcomes* (e.g., employment and earnings, independent living, postsecondary education), measured immediately and over time and in connection to secondary outcomes, wherever possible; and
  - *CTE outcomes* that demonstrate mastery of content or skills (e.g., total CTE credits earned, technical skills assessment, industry certification, or employment in a field related to the CTE training).

- The target population should be students with or at risk for disabilities in secondary school, that is, middle or high school students in Grade 6 through Grade 12.
  - Students who are 18 years or older *and are still receiving services under IDEA* may be included in the sample.
  - Your sample may include students at the post-secondary level *if the purpose is to improve CTE services and interventions provided **at the secondary level*** (i.e., you may collect data from recent high school graduates to inform the development or assess the impact of CTE programs or practices implemented at the secondary level).
  - *Note*: If your project focuses on postsecondary CTE, you must apply to the Postsecondary and Adult Education topic in the Education Research Grants competition (CFDA 84.305A).

b) Requirements
Applications under the CTE topic **must** meet the requirements listed in *Part I.B. General Requirements*, as well as the relevant goal requirements listed under *Part III: Goal Descriptions and Requirements,* in order to be sent forward for scientific peer review.

c) Considerations for CTE Research
Through this funding mechanism, the Institute supports field-generated research that meets all requirements outlined in this Request for Applications. The Institute also encourages applicants to consider the research issues listed below. The Institute's peer review process is not designed to give preferential treatment to applications that address these issues; rather, the Institute encourages such applications because, if found to have scientific merit by the Institute's independent peer reviewers, they have the potential to lead to important advances in the field.

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[7] Academic skills include general academic content-area skills and basic academic skills. 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).

- Researchers are encouraged to collect primary data as well as leverage existing administrative datasets from school districts, institutions of higher education, states, industries, employers, and other relevant organizations to identify factors in CTE that are associated with positive secondary and postsecondary education outcomes for students with disabilities. This includes, for example, the programs, curriculum features, credentialing, proposed student progression in CTE, and employment experiences that lead to student persistence, completion, course credits, and postsecondary employment opportunities.

- The development and testing of new CTE programs or policies designed to support students with or at risk for disabilities and their plans for post-school education and career outcomes is needed. In addition, data are needed on the optimal age to begin transition planning to develop or enhance programs focused on CTE and transition.

- There is a need for evaluations of existing career-focused schools, practices, programs, or policies to understand the impact on outcomes for students with disabilities (e.g., awarding of vocational diplomas, district use of career-readiness measures, implementation of career academy models, awarding academic credit for CTE courses, schools' offering of online career exploration tools, and CTE teacher certification requirements). In addition, the Institute is particularly interested in understanding what types of programs work best for whom and under what conditions.

Please contact the Program Officer for this special research topic to discuss your choice of topic and goal, and to address other questions you may have.

13. Special Topic: English Learners with Disabilities (EL)

Program Officer: Amy Sussman, Ph.D. (202-245-7424; Amy.Sussman@ed.gov)

a) Purpose

The English Learners with Disabilities (English Learners) special research topic supports research that contributes to positive education or school readiness outcomes of English learners in preschool through Grade 12. The Institute uses the term English learner under a broad definition encompassing all students whose home language is not English and whose English language proficiency hinders their ability to meet expectations for students at their grade level.[8]

> **Target Population:**
> Preschool – Grade 12

English learners (ELs) are a growing population in the United States, and students with disabilities receiving services under the Individuals with Disabilities Act constitute approximately 13.8% of ELs (McFarland et al., 2017), a statistic that only includes children actually identified and receiving services in elementary or secondary schools. However, the situation is more nuanced than this: Studies have found that English learners are underrepresented in special education in early grades, but over-represented later in elementary school (Hibel & Jasper, 2012; Samson & Lesaux, 2009). Explanations for this shift vary, including a delay in disability identification for younger children acquiring English and older children with disabilities taking longer to be reclassified as non-EL (e.g., Kieffer & Parker, 2016; Thompson, 2017).

Measurement and proper classification for EL and disability status is a challenge. ELs may have disabilities that mask their low proficiency in English skills or they may appear to have a disability when their academic problems stem from English acquisition (e.g., Abedi, 2009; Sullivan, 2011). Measuring English proficiency is also a policy issue. The Every Student Succeeds Act (ESSA) requires that (1) all states develop standard criteria and procedures for determining EL status, and (2) all EL students, including those with disabilities, must participate in annual English language proficiency assessments. In recent years, state education agencies having been choosing English language proficiency assessments and must find a way to select ones that can be used for students who are both ELs and have disabilities. States and districts currently vary not only in assessments to establish proficiency, but the cut points to guide decisions about EL status (U.S. Department of Education, 2015). The overall criteria for determining EL status, including how the assessment data are used alone or in conjunction with other criteria, vary greatly by state (Linquanti & Cook, 2015). These are important issues because whether a student is designated as EL impacts services received to support English language learning.

b) Requirements

Applications under the EL topic **must** meet the requirements listed in *Part I.B. General Requirements*, as well as the relevant goal requirements listed under *Part III: Goal Descriptions and Requirements,* in order to be sent forward for scientific peer review.

c) Considerations for EL Research

Through this funding mechanism, the Institute supports field-generated research that meets all requirements outlined in this Request for Applications. The Institute also encourages applicants to consider the research issues listed below. The Institute's peer review process is not designed to give preferential treatment to applications that address these issues; rather, the Institute encourages such applications because, if found to have scientific merit by the Institute's independent peer reviewers, they have the potential to lead to important advances in the field.

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[8] Note that in addition to having different spoken languages in the home setting, English Learners may also include those whose primary home language is sign language.

- Measurement studies to develop and validate assessments are needed to better distinguish academic difficulties due to a disability (e.g., reading disability) from those due to the acquisition of English. Assessments that allow early identification of disability, or risk for disability, in young EL children are particularly important to reduce or eliminate the need for later, more intensive services.

- Research is needed to determine not only the most valid ways of assessing English language proficiency in students with or at risk for disabilities, but also how the assessment data are used. Additional exploration studies may be warranted to examine how state criteria for measuring English language proficiency relate to education outcomes for students with disabilities. For example, there is some evidence that more stringent criteria for exiting EL status are associated with better student outcomes, such as graduation rates and achievement (Hill et al., 2014; Robinson-Cimpian & Thompson, 2016).

- The interaction between disability identification and EL classification and the consequent receipt of services is another area that is ripe for exploration research. There is concern that once EL students are identified as needing special education services, they may not receive as much EL support (Hibel & Jasper, 2012; Thompson, 2015). On the other hand, sometimes eligibility for special education is delayed until after English language services are provided (e.g., Tanenbaum et al., 2012). There is also increasing interest in helping EL students within a Multi-Tiered Systems of Support framework (e.g., Socie & Vanderwood, 2016), which may help identify those who may require special education services (e.g., Beach & O'Connor, 2015).

- In addition to developing and evaluating interventions and coordination of services for EL students with or at risk for disabilities, there is a need to increase the understanding of educators. Researchers examining data across 20 states concluded that lack of teacher knowledge is a key reason for inconsistent identification of EL students with disabilities (Burr, Haas, & Ferriere, 2015). Both general and special education teachers need a better understanding of language acquisition, language screening and assessment, and instruction for this population.

Please contact the Program Officer for this topic to discuss your choice of topic and goal, and to address other questions you may have.

14. Special Topic: Systems-Involved Students with Disabilities (Systems-Involved Students)

Program Officer: Katherine (Katie) Taylor, Ph.D. (202-245-6716; Katherine.Taylor@ed.gov)

a) Purpose

The Systems-Involved Students with Disabilities (Systems-Involved Students) special research topic supports research that contributes to positive education outcomes of students with or at risk for disabilities who are in juvenile justice, foster care, or out of home (e.g., residential) placements. Often referred to as disconnected,

> *Target Population:*
> *Students in Grades K-12*

underserved, vulnerable, or systems-involved children and youth, these students face a multitude of challenges and are more likely to experience a variety of negative outcomes, including poor academic achievement, dropout, and unemployment (e.g., Bullis, Yovanoff, & Havel, 2004; Geenen & Powers, 2006; Trout, Hagaman, Casey, Reid & Epstein, 2008). High numbers of students with disabilities are reportedly in juvenile justice, foster care, and out of home placements (Lambros, Hurley, Hurlburt, Zhang, & Leslie, 2010; Quinn, Rutherford, Leone, Osher, & Poirier, 2005), yet there has been limited research on the specific needs of students with disabilities in these groups.

Although students in each of these groups experience unique challenges, they do share a common set of risk factors that can impact their academic achievement, school completion, and post-school success. For instance, systems-involved children and youth are generally highly mobile and, as such, are more likely to experience a lack of continuity in service provision that can lead to poor academic outcomes (e.g., Courtney, Roderick, Smithgall, Gladden, & Nagaok, 2004; Malmgren & Meisel, 2002). It is also common for these youth to experience trauma and/or demonstrate emotional and behavioral difficulties that can affect their ability to engage in learning and place them at risk for dropping out (e.g., Burns et al., 2004; Quinn et al., 2005). There are also common systemic barriers that can influence the quality of education systems-involved students receive. For example, a lack of communication and coordination across educational systems can negatively impact the extent to which students with disabilities are properly identified and receive the appropriate disability-related supports and services (e.g., Houchins, Jolivette, Shippen, & Lambert, 2010). Additionally, a lack of qualified special education teachers, service providers and other instructional personnel and high turnover in personnel in juvenile justice settings and other residential treatment facilities has also been cited (e.g., Connor et al., 2003; Gagnon, Houchins, & Murphy, 2012).

Through this special research topic, the Institute seeks to support research that addresses these individual and systemic risk factors and promotes positive education, transition, and post-school outcomes for one or more groups of systems-involved students with or at risk for disabilities. The Institute invites research on student- and teacher-level intervention approaches to improve outcomes for these students as well as research on systems-level practices and policies that are intended to improve the management, coordination, and implementation of systemic programs and services in ways that directly enhance the overall education environment, and indirectly improve student outcomes.

Please note the following about this topic:

- Student outcomes for the Systems-Involved Students topic can address a range of student outcomes, including *general education outcomes* that are important to parents, teachers, and school administrators (e.g., grades, achievement test scores, graduation rates); *academic outcomes* of reading, writing, STEM (science, technology, engineering, and/or mathematics); *social, emotional, and behavioral outcomes* that support learning; *transition outcomes* that enable youth to hold meaningful employment, live independently, and obtain further training and education; and *post-high school outcomes* (e.g., employment and earnings, postsecondary education, independent living) when appropriate.

- Student samples should focus on students in kindergarten through Grade 12.

- o Students who are 18 years or older *and are still receiving services under IDEA* may be included in the sample.
- o Your sample may include students at the post-secondary level *if the purpose is to improve services and interventions provided **at the secondary level*** (i.e., you may collect data from recent high school graduates to inform the development or assess the impact of transition programs or practices implemented at the secondary level).

b) Requirements

Applications under the Systems-Involved Students topic **must** meet the requirements listed in *Part I: Overview and General Requirements, B. General Requirements*, as well as the relevant goal requirements listed under *Part III: Goal Descriptions and Requirements,* in order to be sent forward for scientific peer review.

c) Considerations for Systems-Involved Students Research

Through this funding mechanism, the Institute supports field-generated research that meets all requirements outlined in this Request for Applications. The Institute also encourages applicants to consider the research issues listed below. The Institute's peer review process is not designed to give preferential treatment to applications that address these issues; rather, the Institute encourages such applications because, if found to have scientific merit by the Institute's independent peer reviewers, they have the potential to lead to important advances in the field.

- Systems-Involved students with disabilities are at greater risk for experiencing negative outcomes, such as poor academic achievement, dropout, and unemployment (e.g., Geenen & Powers, 2006; Zhang, Barrett, Katsiyannis, & Yoon, 2011). Although, previous research has identified key factors that place these students at risk for poor education outcomes (e.g., Courtney et al., 2004; Malmgren & Meisel, 2002; Trout et al., 2008), a better understanding of the specific educational risks for children and youth with disabilities is needed. Exploration research is encouraged to identify malleable factors that are related to education outcomes for systems-involved students and could be potential targets for intervention, including factors that place them at risk for negative outcomes and protective factors that serve as buffers for negative outcomes.

- There continues to be a gap in the transition outcomes of youth with disabilities compared to those without disabilities (e.g., Lipscomb et al., 2017). This gap is even larger for systems-involved students with disabilities (e.g., Smithgall, Gladden, Yang, & Goerge, 2005), who experience additional challenges to successful transitions including limited coordination between educational settings and few school- and family-based support services for youth who are reintegrating into their schools or communities (e.g., Trout et al., 2008). Thus, additional research is needed to develop and evaluate interventions to support students as they transition back into school and their community as well as programs that assist students in obtaining the skills needed for further education or employment.

- Systems-involved students often interact with multiple education systems and service providers (e.g., Courtney et al., 2004). As such, research is needed to develop and evaluate programs that promote communication and collaboration among these systems (e.g., information and record sharing) and service providers in order to improve disability identification and service provision and ultimately student outcomes.

- Given that a large portion of students who are in juvenile justice, foster care, or out of home placements demonstrate emotional and behavioral difficulties that can impede their school engagement and completion (e.g., Burns et al., 2004; Quinn et al., 2005), there is a need for research on interventions that address the social, emotional, and behavioral needs of systems-involved students with or at risk for disabilities, particularly those who have experienced trauma.

Please contact the Program Officer for this topic to discuss your choice of topic and goal, and to address other questions you may have.

PART III: GOAL DESCRIPTIONS AND REQUIREMENTS

A. APPLYING UNDER A GOAL

For the FY 2019 Special Education Research Grants program, you must select one of the five research goals described below. You must identify the specific research goal for your application on the SF-424 Form (Item 4b) of the Application Package (see Part VI.E.1) or the Institute may reject the application as nonresponsive to the requirements of this Request for Applications.

You should select the research goal that most closely aligns with the purpose of the research you propose, regardless of the specific methodology you plan to use. In other words, let your research questions guide your choice of research goal. If you are not sure which of the five research goals is most appropriate for your application, contact one of the Institute's Program Officers for help in selecting a research goal (see Part II: Topic Descriptions Requirements and Part VI.I: Program Officer Contact Information). You will also get feedback on your goal choice from the Institute's Program Officers when you submit your Letter of Intent (see Part IV.C.1: Submitting a Letter of Intent).

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).

- The Institute considers interventions to encompass the wide range of education curricula; instructional approaches; professional development; technology; and practices, programs, and policies that are implemented at the student-, classroom-, school-, district-, state-, or federal-level to improve student education outcomes.

- The Institute considers assessments to include "any systematic method of obtaining information, used to draw inferences about characteristics of people, objects, or programs; a systematic process to measure or evaluate the characteristics or performance of individuals, programs, or other entities, for purposes of drawing inferences; sometimes used synonymously with test" (AERA, 2014).

The Institute supports a broad range of quantitative research methods across the five research goals (e.g., randomized controlled trials, validation methods for assessments). However, the Institute reminds applicants that mixed-methods approaches (a combination of quantitative and qualitative methods) are welcome in all goals and topics. These two approaches complement one another and when combined, can inform the research process at every stage from exploration through evaluation.

For each research goal, the Purpose, Project Narrative Requirements, Recommendations for a Strong Application, and Award Maximums are described. Please note the following:

- The requirements for each goal are the minimum necessary for an application to be sent forward for scientific peer review. **Your application must meet all the requirements listed for the goal you select in order for your application to be considered responsive and sent forward for scientific peer review.**

- To improve the quality of your application, the Institute offers Recommendations for a Strong Application following each set of Project Narrative requirements. The scientific peer reviewers are asked to consider the recommendations in their evaluation of your application. **The Institute strongly encourages you to incorporate the recommendations into your Project Narrative.**

1. Exploration (Goal One)

a) Purpose

The Exploration goal supports projects that will identify malleable factors associated with student education outcomes and/or the factors and conditions that mediate or moderate these relationships. Exploration projects are intended to build and inform theoretical foundations to support (1) the development of interventions or the evaluation of these interventions or (2) the development and validation of assessments.

If you plan to develop or evaluate an intervention or assessment, you must apply under one of the other appropriate research goals or your application will be deemed nonresponsive and will not be forwarded for scientific peer review.

Projects under the Exploration goal analyze primary data, secondary data, or both and will result in a conceptual framework that identifies the following:[9]

> *Malleable factors*
>
> Things that can be changed by the education system to improve student education outcomes.

- A relationship between a malleable factor and a student education outcome, or

- Factors that mediate or moderate this relationship, or

- Both a relationship between a malleable factor and a student education outcome *and* the factors that mediate or moderate this relationship.

b) Requirements and Recommendations

Applications under the Exploration goal **must meet the requirements set out under (1) Project Narrative** in order to be responsive and sent forward for scientific peer review. The requirements are the minimum necessary for an application to be sent forward for peer review.

In order to improve the quality of your application, the Institute offers recommendations following each set of Project Narrative requirements.

(1)   Project Narrative

The Project Narrative (recommended length: no more than 25 pages) for an Exploration project application **must** include four sections – Significance, Research Plan, Personnel, and Resources.

a. **Significance** – The purpose of this section is to explain why it is important to study these particular malleable factors and their potential association with student education outcomes.
   Requirements: In order to be responsive and sent forward for peer review, applications under the Exploration goal **must** describe

   (i)   The factors to be studied.

   Recommendations for a Strong Application: The Institute recommends that you include the following in your Significance section to provide a compelling rationale for the proposed exploratory work.

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[9] Under the Exploration goal, the Institute does not support work to develop an intervention or to test the causal impact of an intervention. You may propose to conduct experimental studies under the Exploration goal as long as the purpose is to examine relationships between malleable factors and student education outcomes and/or mediators and moderators of these relationships. If you intend to examine an intervention that first requires further development, you should apply under the Development and Innovation goal. Similarly, if you intend to combine 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 estimate the causal impact of an intervention, you should apply under the Efficacy and Follow-Up goal or Replication: Efficacy and Effectiveness goal.

Project Aims:

- Describe how the factors are malleable and under the control of the education system, the relationships you expect them to have with student education outcomes, and any mediators or moderators you will be studying.

- Explain why you think these malleable factors are important leverage points for future intervention development and testing. **How will identifying the relationship between these malleable factors and education outcomes lead to meaningful improvements for students?**

Rationale:

- Include your theory and evidence that the malleable factors may be associated with beneficial student education outcomes or that the mediators and moderators may influence such an association.

Practical Importance:

- Discuss how the results will go beyond what is already known and how the results will be important both to the field of special education research and to education practice and education stakeholders (e.g., practitioners and policymakers). If you are studying an existing intervention (or a major component of an intervention), discuss how widely the intervention is used and why an Exploration study, in contrast to an Efficacy or Replication evaluation, will have practical importance.

Future Work:

- 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.

Dissemination Plan:

- In Appendix A, discuss how you will make the results of your proposed research available to a wide range of audiences in a manner that reflects the purpose of the Exploration Goal.

b. **Research Plan** – The purpose of this section is to describe the methodology you will use to study these particular malleable factors (and mediators or moderators, if applicable) and their potential association with better student education outcomes.

> **Secondary data analyses** are often based on nationally representative surveys or evaluations (e.g., http://nces.ed.gov/pubsearch/licenses.asp); administrative data from federal, state, or district agencies or non-public organizations; and/or data from previous research studies.

A variety of methodological approaches are appropriate under the Exploration goal including, but not limited to, the following: (1) primary data collection and analyses, (2) secondary data analyses, (3) meta-analyses that go beyond a simple identification of the mean effect of interventions (Shadish, 1996), or (4) some combination of these three approaches.

Requirements: In order to be responsive and sent forward for peer review, applications under the Exploration goal **must** describe

- (i) The research design and

- (ii) Data analysis procedures.

Recommendations for a Strong Application: In order to address the above requirements, the Institute recommends that you include the following in your Research Plan section to strengthen the methodological rigor of the proposed exploratory work.

Research Design:

- Describe your research design with enough detail to show how it is appropriate for addressing your research aims.

- Note whether your project is based solely on secondary data analysis or includes primary data collection and analysis alone or in conjunction with secondary data analysis (as this will affect the maximum duration and award you may request). If you plan to code unstructured data (e.g., video files, audio files, transcripts, etc.) or recode video-recorded observations, this is considered a form of primary data collection for the purposes of this RFA. In contrast, if you plan to analyze structured data files that do not require coding prior to analysis this is considered secondary data analysis only.

Sample:

- Consider your sample and its relation to addressing the overall aims of the project (e.g., what population the sample represents).

- For primary data collection and secondary data analysis:

    o Describe the base population, the sample, and the sampling procedures (including justification for any exclusion and inclusion criteria).

    o For all quantitative inferential analyses, demonstrate that the sample provides sufficient power to address your research aims.

- For longitudinal studies using primary data collection, describe strategies to reduce attrition.

- If you intend to link multiple datasets, provide sufficient detail for reviewers to be able to judge the feasibility of the linking plan.

- For meta-analysis projects:

    o Describe and justify the criteria for including or excluding studies.

    o Describe the search procedures for ensuring that a high proportion of eligible studies (both published and unpublished) will be located and retrieved.

    o Describe 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.

    o 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 dataset to be constructed.

Measures:

- Describe the measures and key variables you will be using in the study. For the outcome measures, discuss their validity and reliability for the intended purpose and population.

- For secondary data, note the response rate or amount of missing data for the measures.

    o If the data will be transformed to create any of the key variables, describe this process.

- For primary data collection:

    o Describe the data to be collected and the procedures for data collection.

- o If the data will be transformed to create any of the key variables, describe this process.
- o If observational data or qualitative data are to be collected and analyzed statistically, describe how the data will be collected and coded (including the procedures for monitoring and maintaining inter-rater reliability), and describe the mechanism for quantifying the data if one is needed.

- For meta-analysis projects:
  - o Define the effect size statistics to be used, along with the associated weighting function, procedures for handling outliers, and any adjustments to be applied (e.g., reliability corrections).
  - o Describe the procedures for examining and dealing with effect size heterogeneity.

Data Analysis:

- Describe the statistical models to be used. Discuss why they are the best models for testing your hypotheses, how they address the multilevel nature of education data, and how well they control for selection bias.

- Discuss analyses to explore alternative hypotheses.

- Discuss how you will address exclusion from testing and missing data. Propose to conduct sensitivity tests to assess the influence of key procedural or analytic decisions on the results.

- Provide separate descriptions for any mediator or moderator analyses.

- For qualitative data, describe the intended approach to data analysis, including any software that will be used.

Timeline:

- Provide a timeline for each step in your project including such actions as sample selection and assignment, data collection, data analysis, and dissemination.

- Timelines may be placed in either the Project Narrative or Appendix C: Supplemental Charts, Tables, and Figures but may only be discussed in the Project Narrative.

c. **Personnel** – The purpose of this section is to describe the relevant expertise of your research team, the responsibilities of each team member, and each team member's time commitments.

Requirements: In order to be responsive and sent forward for peer review, applications under the Exploration goal **must** describe

(i) The research team.

Recommendations for a Strong Application: In order to address the above requirement, the Institute recommends that you include the following in your Personnel section to demonstrate that your team possesses the appropriate training and experience and will commit sufficient time to competently implement the proposed research.

- Identify and briefly describe the following for all key personnel (e.g., Principal Investigator, co-Principal Investigators, co-Investigators) on the project team:
  - o Qualifications to carry out the proposed work.
  - o Roles and responsibilities within the project.

- o Percent of time and calendar months per year (academic plus summer) to be devoted to the project.
- o Past success at disseminating research findings in peer-reviewed scientific journals and to policymaker or practitioner audiences.

- 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, include a plan describing how their involvement will not jeopardize the objectivity of the research.

- Describe additional personnel at the primary applicant institution and any subaward institutions along with any consultants.

- Identify the management structure and procedures that will be used to keep the project on track and ensure the quality of its work. This is especially important for projects involving multiple institutions carrying out different tasks that must be coordinated and/or integrated.

- If you have previously received an Exploration award, indicate whether your work under that grant has contributed to (1) the development of a new or refinement of an existing intervention, (2) the rigorous evaluation of an intervention, or (3) the development, refinement, or validation of an assessment.

d. **Resources** – The purpose of this section is to describe both how you have the institutional capacity to complete a project of this size and complexity and your access to the resources you will need to successfully complete this project.

Requirements: In order to be responsive and sent forward for peer review, applications under the Exploration goal **must** describe

(i) The resources to conduct the project.

Recommendations for a Strong Application: In order to address the above requirement, the Institute recommends that you include the following in your Resources section to demonstrate that your team has a plan for acquiring or accessing the facilities, equipment, supplies, and other resources required to support the completion and dissemination of the proposed Exploration work and the commitments of each partner for the implementation and success of the project.

Resources to conduct the project:

- Describe your institutional capacity and experience to manage a grant of this size.

- Describe your access to resources available at the primary institution and any subaward institutions.

- Describe your plan for acquiring any resources that are not currently accessible, will require significant expenditures, and are necessary for the successful completion of the project (e.g., equipment, test materials, curriculum, or training materials).

- Describe your access to the schools (or other authentic education settings) in which the research will take place. Include Letters of Agreement in Appendix E documenting the participation and cooperation of the schools. Convincing letters will convey that the organizations understand what their participation in the study will involve (e.g., annual student and teacher surveys, student assessments, classroom observations).
  - o Include information about student, teacher, and school incentives, if applicable.

- Describe your access to any datasets that you will require. Include Letters of Agreement, data licenses, or existing Memoranda of Understanding in Appendix E to document that you will be able to access the data for your proposed use.

Resources to disseminate the results:

- Describe your resources to carry out your plans to disseminate the results from your exploration project as described in the required Dissemination Plan in [Appendix A: Dissemination Plan](#).
    - Note any specific team members, offices, or organizations expected to take part in your dissemination plans and their specific roles.

(2)   Awards

An Exploration project **must** conform to the following limits on duration and cost:

Duration Maximums:

- **The maximum duration of an Exploration award that solely involves secondary data analysis or meta-analysis is 2 years.**

- **The maximum duration of an Exploration award that involves primary data collection is 4 years.**

Cost Maximums:

- **The maximum award for an Exploration project solely involving secondary data analysis or meta-analysis is $600,000 (total cost = direct + indirect costs).**

- **The maximum award for an Exploration project involving primary data collection is $1,400,000 (total cost = direct + indirect costs).**

2. Development and Innovation (Goal Two)

a) Purpose

The Development and Innovation goal supports the development of new interventions and the further development of existing interventions that are intended to produce beneficial impacts on student education outcomes when implemented in authentic education settings.

If you propose only minor development activities and are mainly focused on testing the intervention's impact, your application will be deemed nonresponsive and will not be forwarded for peer review. Instead, if you have an intervention that is ready to be tested for efficacy, you should apply to the Efficacy and Follow-Up or the Replication: Efficacy and Effectiveness goal.

Projects under the Development and Innovation goal will result in the following:

- A fully-developed version of the proposed intervention (new or modified).

- Evidence on the well-specified theory of change for the intervention.

- Data that demonstrate that end users understand and can feasibly implement the intervention in an authentic education setting.

- A fidelity of implementation measure (or measures) to assess whether the intervention is delivered as intended by the end users in an authentic education setting.

- Pilot data regarding the intervention's promise for generating the intended beneficial student education outcomes and its cost.

> ### *Intervention*
> The wide range of education curricula; instructional approaches; professional development; technology; and practices, programs, and policies that are implemented at the student, classroom, school, district, state, or federal level to improve student education outcomes.
>
> ### *Fully developed intervention*
> An intervention is fully developed when all materials, products, and supports required for its implementation by the end user are ready for use in authentic education settings.

b) Requirements and Recommendations

Applications under the Development and Innovation goal **must meet the requirements set out under (1) Project Narrative** in order to be responsive and sent forward for scientific peer review. The requirements are the minimum necessary for an application to be sent forward for scientific peer review.

In order to improve the quality of your application, the Institute offers recommendations following each set of Project Narrative requirements.

(1) Project Narrative

The Project Narrative (recommended length: no more than 25 pages) for a Development and Innovation project application **must** include four sections – Significance, Research Plan, Personnel, and Resources.

a. Significance – The purpose of this section is to explain why it is important to develop this intervention.

Requirements: In order to be responsive and sent forward for peer review, applications under the Development and Innovation goal **must** describe

(i) The intervention to be developed or revised.

Recommendations for a Strong Application: In order to address the above requirements, the Institute recommends that you include the following in your Significance section to provide a compelling rationale for the proposed Development and Innovation work.

- Clearly 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 education outcomes. Strong applications will discuss the importance of the issue or problem to education stakeholders, such as practitioners and policymakers.

- Clearly describe current typical practice to address this issue or problem and why current practice is not satisfactory.

- Clearly describe your proposed intervention, its key components, and how it is to be implemented. If you are proposing to develop an adaptive intervention, clearly identify and present a rationale for the key components of the intervention, including decision points, tailoring variables, decision rules, and intervention options.[10]

- Compare your intervention to existing interventions currently in use, specifying the shortcomings of those interventions. **The description of your proposed intervention should show that it has the potential to produce substantially better student education outcomes** because

    o it is sufficiently different from current practice and does not suffer from the same shortcomings;

    o it has key components that can be justified, using theoretical or empirical reasons, as powerful agents for improving the outcomes of interest; and

    o its implementation appears feasible for the end user(s) (e.g., instructional personnel, schools) given their resource constraints (e.g., time, funds, personnel, schedules).

- Address the future scalability of the intervention by considering factors such as the potential market for the intervention, the resources and organizational structure necessary for the wider adoption and implementation of the intervention, and the potential commercialization of the intervention.

- Clearly describe the initial theory of change for your proposed intervention (Figure 1 provides an example of one way that you could conceptualize a simple theory of change), along with theoretical justifications and empirical evidence that support it. Keep in mind that you may need to revise your theory over the course of the project.

    o Your theory of change should describe the component or components of the planned intervention that are to lead to changes in one or multiple underlying processes, which in turn will foster better student education outcomes directly or through intermediate outcomes (e.g., changed teacher practices). A more complete theory of change could include further details such as the sample representing the target population, level of exposure to the components of the intervention, key moderators (such as setting, context, student and their family characteristics), and the specific measures used for the outcomes.

    o For interventions designed to directly affect the teaching and learning environment and, thereby, indirectly affect student education outcomes, clearly

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[10] e.g., Lei, H., Nahum-Shani, I., Lynch, K., Oslin, D., & Murphy, S. A. (2012). A "SMART" design for building individualized treatment sequences. *Annual Review of Clinical Psychology, 8*, 14.1–14.28. doi: 10.1146/annurev-clinpsy-032511-143152.

identify in your theory of change any intermediate outcomes that the intervention is designed to affect (e.g., teacher practices) and how these outcomes impact the student education outcomes of interest.
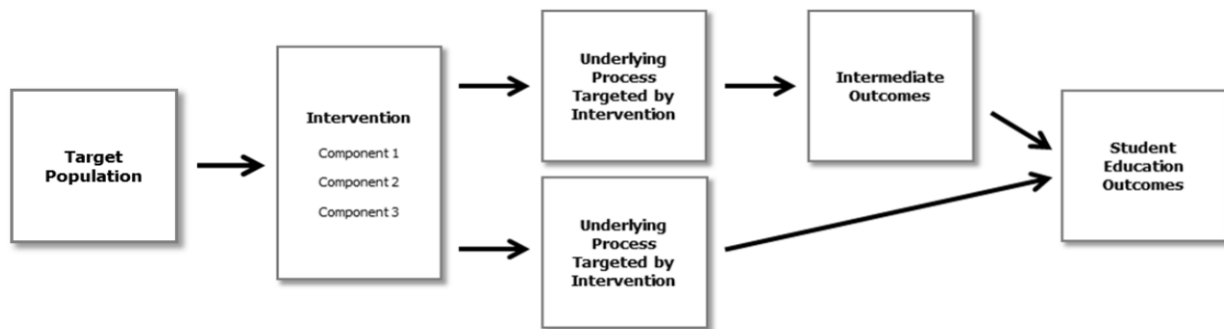
Figure 1. A diagram of a simple theory of change.

- If you are applying for a Development and Innovation award to further develop an intervention that was the focus of a previous Development and Innovation, Efficacy and Follow-Up, or Replication: Efficacy and Effectiveness project, you should (1) justify the need for another award, (2) 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 or evidence from a prior efficacy study indicates the need for further development), and (3) 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.

- In Appendix A, discuss how you will make the results of your proposed research available to a wide range of audiences in a manner that reflects the purpose of the Development and Innovation Goal.

b. **Research Plan** –The purpose of this section is to describe the methodology you will use to develop your intervention, document its feasibility, and determine its promise for improving the targeted student education outcomes and reaching the level of fidelity of implementation necessary to improve those outcomes.

Requirements: In order to be responsive and sent forward for peer review, applications under the Development and Innovation goal **must** describe

(i)   The method for developing the intervention (development process);

(ii)   A plan for a pilot study that will determine the intervention's promise and cost for generating beneficial student education outcomes; and

(iii) A data analysis plan.

Recommendations for a Strong Application: In order to address the above requirements, the Institute recommends that you include the following in your Research Plan section to strengthen the methodological rigor of the proposed Development and Innovation work.

Measures:

- Your measures should address (a) usability, (b) feasibility, (c) fidelity of implementation, (d) student education outcomes, and (e) expected intermediate outcomes.

- Discuss the procedures for administering these measures. For pre-existing measures of student education outcomes or fidelity, discuss each measure's 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.

Development Process:

- As you describe the development process, make clear what will be developed, how it will be developed to ensure usability, and the chronological order of development (e.g., by providing a timeline either in the Project Narrative or [Appendix C: Supplemental Charts, Tables, and Figures](#)).

  - Discuss how you will develop the initial version of the intervention or indicate that there is already an initial version that you intend to revise.

  - 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 and feasibility. Lay out your plan for carrying out a systematic, iterative development process. Keep in mind that

> **Development Process**
>
> The method for developing the intervention to the point where it can be used by the intended end users.
>
> **Pilot Study**
>
> A study designed to provide evidence of the promise of the fully-developed intervention for achieving its intended outcomes when it is implemented in an authentic education setting.
> Note that a pilot study is different from studies conducted during the development process. The latter are designed to inform the iterative development process (e.g., by identifying areas for further development, testing individual components of the intervention).

- The Institute does not require or endorse any specific model of iterative development and suggests that you review models that have been used to develop interventions (e.g., Diamond & Powell, 2011; Fuchs & Fuchs, 2001) to identify processes appropriate for your work.

- There is no ideal number of iterations (revise, implement, observe, revise). You should identify and justify your proposed number of iterations based on the complexity of the intervention and its implementation. This process should continue until you determine

that the intervention can be successfully used by the intended end users.

Evidence of Feasibility of Implementation:

- To determine whether the intervention can be implemented within the requirements and constraints of an authentic education setting (e.g., classroom, school, district), collect feasibility data both in the type of setting (e.g., classroom or school) and with the end users for which the intervention is intended.

- You can collect feasibility evidence at any point during the project.

Fidelity of Implementation:

- Discuss how you will develop the fidelity of implementation measures that will be used to monitor the implementation of the intervention. Information collected on the usability and feasibility of implementation can contribute to the development of fidelity of implementation measures. Prototype fidelity measures can be tested and refined in separate studies or in the pilot study.

- If your intervention includes a training component for end users, you should also develop a measure of the fidelity of implementation of the training.

> **Usability**
>
> The extent to which the intended user understands or can learn how to use the intervention effectively and efficiently, is physically able to use the intervention, and is willing to use the intervention.
>
> **Feasibility**
>
> The extent to which the intervention can be implemented within the requirements and constraints of an authentic education setting.
>
> **Fidelity of implementation**
>
> The extent to which the intervention is being delivered as it was designed to be by end users in an authentic education setting.

Pilot Study:

- Describe the design of the pilot study,[11] the data to be collected, the analyses to be conducted, the criteria you will use to determine whether any change in student education 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.

- To ensure that Development and Innovation projects focus on the development process, a maximum of 35 percent of project funds (direct and indirect funds) should be used for the pilot study (i.e., its implementation, data collection, and analysis of pilot data).

- The type of pilot study you propose will depend upon the intervention, the level at which the intervention is implemented (e.g., student, teacher, school), and the need to stay within the maximum 35 percent of grant funds that could be used for the pilot study. As a result, pilot studies may include the following. The list is meant to be illustrative and not exhaustive, as other designs may be appropriate.

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[11] The meaning of the term "pilot study" differs by discipline. As noted in the glossary, the Institute defines a pilot study as a study separate from the development process that examines the promise of the fully-developed intervention for achieving its intended beneficial impacts on student outcomes.

- o Efficacy studies (e.g., fully-powered, randomized controlled studies).

- o Underpowered efficacy studies (e.g., randomized controlled trials with a small number of students, teachers or schools that provide unbiased effect size estimates of practical consequence which can stand as evidence of promise while not statistically significant).

- o Single-case studies that meet the pilot design standards for individual single-case studies set by the What Works Clearinghouse (Kratochwill et al., 2010).

- o 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).

- Identify the measures to be used for all outcomes identified in your theory of change. Give careful consideration to the measures of student education 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 students, parents, education practitioners, and policymakers.

- Explain how you will measure and report effect sizes in ways that policymakers and practitioners can readily understand. For example, a development study of a reading or math intervention might report on the number of months gained in reading or math skills as a result of the intervention.

- Describe how you will measure fidelity of implementation during the pilot and how you will determine whether fidelity is high enough to expect beneficial student education outcomes. Discuss possible responses if you find lower than expected fidelity (e.g., efforts to increase fidelity). In addition, if a training component is included in the intervention, then evidence of promise should also address the fidelity of implementation of the training component and whether it is high enough to expect end users to implement the intervention as planned.

- Address whether the comparison group is implementing something similar to the intervention during the pilot study and, if so, provide a determination of whether the treatment and comparison groups are different enough to expect the predicted student education outcomes.

- Describe how you will analyze the costs of implementing the intervention in your pilot study.

  - o Describe how you will identify all potential expenditures (e.g., expenditures for personnel, facilities, equipment, materials, training, and other relevant inputs) and compute the following costs:

    - ▪ Cost at each level (e.g., state, district, school, classroom, student) individually, as well as overall cost.

    - ▪ Cost per component (for any intervention composed of multiple components).

    - ▪ Intervention costs may be contrasted with the costs of comparison group practice to reflect the difference between them.

  - o Describe what population of districts, schools, classrooms, and/or students will be captured by your cost analysis.

  - o The Institute encourages a cost-effectiveness analysis for pilot studies with designs that can support such analysis (e.g., fully-powered, randomized controlled trials). A cost-effectiveness analysis is intended to consider together the cost of the intervention and the impact of the intervention. For

recommendations on how to describe a cost-effectiveness analysis in your application, see the cost analysis section under Goal Three.

Timeline:

- Provide a timeline for each step in your project including such actions as the development process, pilot study sample selection and assignment, data collection, data analysis, and dissemination.

- Timelines may be placed in either the Project Narrative or Appendix C: Supplemental Charts, Tables, and Figures, but may only be discussed in the Project Narrative.

c. **Personnel** – The purpose of this section is to describe the relevant expertise of your research team, the responsibilities of each team member, and each team member's time commitments.

Requirements: In order to be responsive and sent forward for peer review, applications under the Development and Innovation goal **must** describe

(i) The research team.

Recommendations for a Strong Application: In order to address the above requirement, the Institute recommends that you include the following in your Personnel section to demonstrate that your team possesses the appropriate training and experience and will commit sufficient time to competently implement the proposed research.

- Identify and briefly describe the following for all key personnel (e.g., Principal Investigator, co-Principal Investigators, co-Investigators) on the project team:

  o Qualifications to carry out the proposed work.

  o Roles and responsibilities within the project.

  o Percent of time and calendar months per year (academic plus summer) to be devoted to the project.

  o Past success at disseminating research findings in peer-reviewed scientific journals and to policymaker or practitioner audiences.

- 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, include a plan describing how their involvement will not jeopardize the objectivity of the research.

- Describe additional personnel at the primary applicant institution and any subaward institutions along with any consultants.

- Identify the management structure and procedures that will be used to keep the project on track and ensure the quality of its work. This is especially important for projects involving multiple institutions carrying out different tasks that must be coordinated and/or integrated.

- If you have previously received an award from the Institute 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 efficacy (by yourself or another research team).

d. **Resources** – The purpose of this section is to describe both how you have the institutional capacity to complete a project of this size and complexity and your access to the resources you will need to successfully complete this project.

> **Requirements:** In order to be responsive and sent forward for peer review, applications under the Development and Innovation goal **must** describe
>
> (i)   The resources to conduct the project.
>
> **Recommendations for a Strong Application:** In order to address the above requirement, the Institute recommends that you include the following in your Resources section to demonstrate that your team has a plan for acquiring or accessing the facilities, equipment, supplies, and other resources required to support the completion and dissemination of the proposed Development and Innovation work and the commitments of each partner for the implementation and success of the project.
>
> *Resources to conduct the project:*
>
> - Describe your institutional capacity and experience to manage a grant of this size.
>
> - Describe your access to resources available at the primary institution and any subaward institutions.
>
> - Describe your plan for acquiring any resources that are not currently accessible, will require significant expenditures, and are necessary for the successful completion of the project (e.g., equipment, test materials, curriculum, or training materials).
>
> - Describe your access to the schools (or other authentic education settings) in which the research will take place. Include Letters of Agreement in Appendix E documenting the participation and cooperation of the schools. Convincing letters will convey that the organizations understand what their participation in the study will involve (e.g., annual student and teacher surveys, student assessments, classroom observations).
>
>   o   Include information about student, teacher, and school incentives, if applicable.
>
> - Describe your access to any datasets that you will require. Include Letters of Agreement, data licenses, or existing Memoranda of Understanding (MOUs) in Appendix E to document that you will be able to access the data for your proposed use.
>
> *Resources to disseminate the results:*
>
> - Describe your resources to carry out your plans to disseminate results from your Development study, as described in the required Dissemination Plan in Appendix A: Dissemination Plan.
>
>   o   Note any specific team members, offices, or organizations expected to take part in your dissemination plans and their specific roles.

(2)   Awards

A Development and Innovation project **must** conform to the following limits on duration and cost:

Duration Maximums:

- **The maximum duration of a Development and Innovation project is 4 years.**

  o   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. For example, 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), requesting a 4-year project is appropriate.

Cost Maximums:

- **The maximum award for a Development and Innovation project is $1,400,000** (total cost = direct costs + indirect costs).

    o Your pilot study should require no more than 35 percent of your total budget. You should note the budgeted cost of the pilot study (i.e., its implementation, data collection, and analysis of pilot data) and its percentage of the total budget in your Budget Narrative.

3. Efficacy and Follow-Up (Goal Three)

a) Purpose

The Efficacy and Follow-up goal supports the evaluation of fully developed education interventions that have not been previously evaluated using a rigorous design (i.e., an initial efficacy evaluation). Its purpose is to determine whether interventions produce a beneficial impact on student education outcomes relative to a counterfactual when they are implemented in authentic education settings. It also supports longer-term follow-up for rigorously-evaluated interventions.

Projects under the Efficacy and Follow-up goal will result in the following:

> **Initial efficacy evaluation**
>
> A test of the impact of an intervention that has not been rigorously evaluated in a prior causal impact study.

- Evidence regarding the impact of a fully developed intervention on relevant student education outcomes relative to a comparison condition using a research design that meets the Institute's What Works Clearinghouse evidence standards (with or without reservations) (https://ies.ed.gov/ncee/wwc/Handbooks).

- Conclusions about and revisions to the theory of change that guides the intervention and a discussion of the broader contributions to the theoretical and practical understanding of education processes and procedures.

- Information on how study findings – including intervention implementation and cost – fit in and contribute to the evidence on the intervention.

- Information needed for future research.

  o If a beneficial impact is found, the identification of the organizational supports, tools, and procedures needed for sufficient implementation of the core components of the intervention under a future Efficacy Replication or Effectiveness Study.

  o If no beneficial impact is found, a determination of whether and how to revise the intervention and/or its implementation under a future Development and Innovation project, or recommendations for new exploratory research.

The Institute supports three types of studies under the Efficacy and Follow-Up goal:

- Initial Efficacy – A study that tests an intervention that has not been rigorously evaluated previously to examine the intervention's beneficial impact on student education outcomes in comparison to an alternative practice, program, or policy.

  o If prior research on the intervention included a rigorous causal impact study (i.e., one that would meet the Requirements and Recommendations for a Goal Three Efficacy and Follow-Up study), then the proposed evaluation should be submitted under Replication: Efficacy and Effectiveness (Goal Four).

- Follow-Up – A study that tests the longer-term impact of an intervention that has been shown to have beneficial impacts on student education outcomes in a previous or ongoing evaluation study. Follow-up studies may examine:

  o Students who took part in the original study as they enter later grades (or different places) in order to determine if the beneficial effects are maintained and/or to see if new effects emerge in the long-term.

  o The education personnel who implemented the intervention under the original evaluation study to determine if their continued implementation of the intervention will benefit a new group of students. These studies examine the sustainability of the intervention's

implementation as well as impacts after the additional resources provided by the original study are withdrawn.

- <u>Retrospective</u> – A study that analyzes retrospective (historical) secondary data to test the impact of an intervention implemented in the past.

b) Requirements and Recommendations
Applications under the Efficacy and Follow-Up goal **must meet the requirements set out under (1) Project Narrative and (2) Data Management Plan** in order to be responsive and sent forward for scientific peer review. The requirements are the minimum necessary for an application to be sent forward for scientific peer review.

In order to improve the quality of your application, the Institute offers recommendations following each set of Project Narrative requirements.

(1)   Project Narrative

The project narrative (recommended length: no more than 25 pages) for an Efficacy and Follow-Up project application **must** include four sections: Significance, Research Plan, Personnel, and Resources.

a. **Significance** – The purpose of this section is to explain why it is important to test the impact of the intervention on student education outcomes under the proposed conditions and sample.

Requirements: In order to be responsive and sent forward for scientific peer review, applications under the Efficacy and Follow-Up goal **must** describe

(i)   The intervention to be evaluated; and

(ii) For a Follow-up study, the evidence from the original evaluation.

Recommendations for a Strong Application: In order to address the above requirements, the Institute recommends that you include the following in your Significance section to provide a compelling rationale for the proposed Efficacy work.

- Make clear what type of study you are proposing (Initial Efficacy, Follow-up, or Retrospective) and why such an evaluation is needed.

- Describe the fully-developed intervention that you propose to evaluate, including

  o The intervention's components;

  o The processes and materials (e.g., manuals, websites, training, coaching) that will be used to support implementation of the intervention; and

  o Evidence that the intervention is fully developed and ready for implementation in authentic education settings (e.g., all materials and implementation supports such as professional development are available).

    ➢ Applications to evaluate newly developed and non-widely used interventions often require more of this type of evidence than those evaluating widely used interventions.

    ➢ If the intervention you wish to test and/or its implementation processes and materials are not yet fully developed, you should apply under the Development and Innovation goal to complete it.

- Describe the intervention's context:

  o Identify the target population and where implementation will take place.

- o Identify who the <u>end users</u> of the intervention are and describe how implementation will be carried out by them.

- o Describe the conditions under which the intervention will be implemented. For example:

> ┌─────────────────────────────────┐
> │ *End user* │
> │ The person intended to be │
> │ responsible for the implementation │
> │ of the intervention. │
> └─────────────────────────────────┘

  - ➢ Ideal or non-routine conditions provide a more controlled setting under which the intervention may be more likely to have beneficial impacts. For example, ideal or non-routine conditions could include more implementation support than would be provided under routine practice in order to ensure adequate fidelity of implementation.

  - ➢ Routine conditions reflect the everyday practice occurring in classrooms, schools, and districts, including the expected level of implementation that would take place if no study was being done and a sample that represents the heterogeneity of the students, teachers, schools, and districts being studied. If the study is to be implemented under routine conditions, describe the following:

    - ▪ The implementation of the intervention, making clear that it would be the same as for any similar school or district intending to use the intervention.

    - ▪ The level of implementation support provided by the developer or distributor, if applicable. This level of support should be no greater than what a district or school would routinely receive if not taking part in the study.

    - ▪ The heterogeneity of the sample in comparison with that of the target population.

- Discuss the future scalability of the intervention including the potential market for the intervention, the resources and organizational structure necessary for the wider adoption and implementation of the intervention, and the potential commercialization of the intervention.

- Clearly describe the initial <u>theory of change</u> for your proposed intervention (Figure 2 provides an example of one way that you could conceptualize a simple theory of change) along with the theoretical justifications and empirical evidence that support it.

  - o Your theory of change should describe the component or components of the planned intervention that are to lead to changes in one or multiple underlying processes, which in turn will foster better student education outcomes directly or through intermediate outcomes (e.g., changed teacher practices). A more complete theory of change could include further details such as the sample representing the target population, level of exposure to the components of the intervention, key moderators (such as setting, context, student and their family characteristics), and the specific measures used for the outcomes.

  - o For interventions designed to directly affect the teaching and learning environment and, thereby, indirectly affect student education outcomes, in your theory of change clearly identify any intermediate outcomes that the intervention is designed to affect (e.g., teacher practices) and how these outcomes impact the student education outcomes of interest.
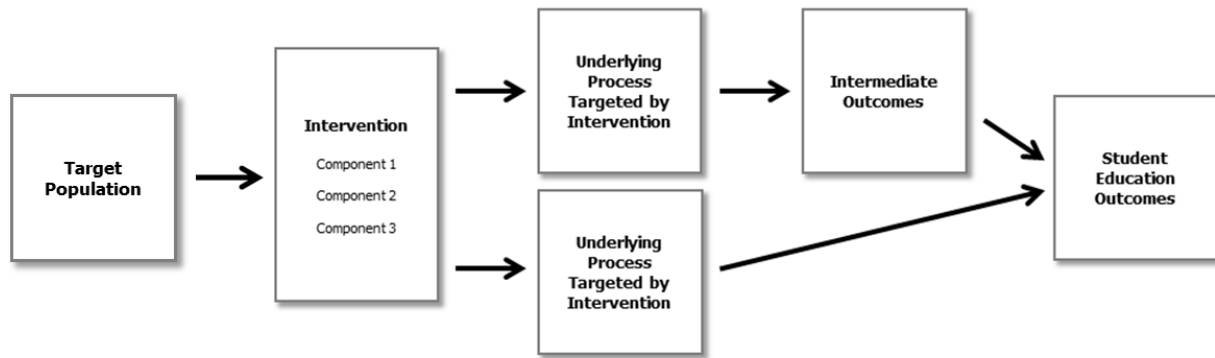
Figure 2. A diagram of a simple theory of change.

- Address why the intervention is likely to produce better student outcomes relative to current practice and discuss the overall practical importance of the intervention (i.e., why education practitioners or policymakers should care about the results of the proposed evaluation). **Specifically address the potency of the intervention and what practically important impacts are expected**. The specifics of your rationale will differ by the type of study you propose:

  o For an Initial Efficacy study of a **widely used intervention** (e.g., a commercial curriculum or a specific state program), provide evidence that it is currently in widespread use (across the country or within a state, large district, or multiple districts) and the history of its use (e.g., if the program was developed several decades ago, is it still being used today?). In addition, describe any prior studies that have examined the intervention (e.g., correlational studies; pilot studies to evaluate promise), note their findings, and discuss how your proposed study would improve on past work. Widely used interventions may not have evidence of promise of impact on student education outcomes, but their use may be so currently widespread that their evaluation could have important implications for practice and policy.

  o For an Initial Efficacy study of a **not widely used intervention**, focus on the evidence showing the intervention's readiness for implementation, feasibility, fidelity of implementation, and promise for achieving its intended outcomes (as described under Development and Innovation). Describe any prior studies that have examined the intervention (e.g., correlational studies, pilot studies to evaluate promise), note their findings, and discuss how your proposed study would improve on past work.

  o For a **Follow-up Study**, describe the existing evidence of the intervention's beneficial impact on student outcomes from a previous evaluation study (either completed or ongoing).

    ➢ Clearly describe the completed or ongoing evaluation study, including the sample, design, measures, fidelity of implementation, analyses, and results so that reviewers have sufficient information to judge its quality.

      - Grant funds should not be used to support implementation of the intervention in a follow-up study. However, districts and schools can support implementation through their own funds.

    ➢ Explain why the original impacts would be expected to continue into the future (this may require revising the original theory of change) and why the impacts found would be considered of practical importance.

- For a **Retrospective Study** relying on secondary analysis of historical data, discuss how widespread the intervention's use was and provide conceptual arguments for the importance of evaluating the intervention, including the intervention's relevance to current education practice and policy.

  - If the intervention is ongoing, discuss why a historical evaluation would be relevant compared to an evaluation using prospective data.

  - If the intervention is no longer in use, address how the results of your evaluation would be useful for improving today's practice and policy.

  - Be clear on what the existing data will allow you to examine and what issues you will not be able to address due to a lack of information. This discussion should include what is known or could be determined about the intervention's fidelity of implementation and comparison group practice. Discuss the implications for interpreting your results due to a lack of such information.

- In Appendix A, describe how you will make the results of your proposed research available to a wide range of audiences in a manner that reflects the purpose of the Efficacy and Follow-Up goal.

b. **Research Plan** – The purpose of this section is to describe the evaluation of the intervention.

Requirements: In order to be responsive and sent forward for peer review, **all** applications under the Efficacy and Follow-Up goal **must** describe

  (i) The research design;

  (ii) The power analysis; and

  (iii) Data analysis procedures.

In addition, Initial Efficacy Studies **must** include plans fo:

  (iv) A cost analysis; and

  (v) A cost-effectiveness analysis, or a rationale for why a cost-effectiveness analysis cannot be done.

Recommendations for a Strong Application: In order to address the above requirements, the Institute recommends that you include the following in your Research Plan section to strengthen the methodological rigor of the proposed work.

If you propose a single-case experimental design as the primary means for establishing efficacy, please see additional recommendations outlined below in *Additional Recommendations for Single-Case Experimental Designs Proposed as the Primary Design for Efficacy Studies.*

Sample and Setting:

- Discuss the population you intend to study and how your sample and sampling procedures will allow you to draw inferences for this population.

- Define your sample and sampling procedures for the proposed study, including justification for exclusion and inclusion criteria.

- 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.

- Describe the authentic education setting in which the study will take place (e.g., the size and characteristics of the school and/or the surrounding community) and how this may affect the generalizability of your study.

- For a Follow-up Study, discuss the following:

  o Evidence that you have access to research participants for successful follow-up (e.g., Letters of Agreement from schools or districts to be included in Appendix E).

  o Sample attrition during the prior study and your ability to follow sample members, including teachers and students, in your proposed follow-up. You should include a CONSORT flow diagram showing the numbers of participants at each stage of the prior study. Also, you should discuss what steps you will take to minimize attrition in the follow-up study.

  o For follow-up studies of education personnel, how you will determine whether the incoming cohort of students is similar to the original student cohort, whether the incoming cohort of treatment and control students are similar enough to compare to the prior cohort and what you will do if they are not similar in either way.

Research Design:

- Describe a plan for pre-registering the study in an education repository (e.g., SREE Registry of Efficacy and Effectiveness Studies).

- Describe your research design.

  o Randomized controlled trials are preferred whenever feasible because they have the strongest internal validity for causal conclusions. If a randomized controlled trial is proposed, describe the following:

    ➢ The unit of randomization (e.g., student, classroom, teacher, or school) and a convincing rationale for this choice.

    ➢ Procedures for random assignment to condition and how the integrity of these procedures will be ensured.

    ➢ How you will document that the treatment and comparison groups are equivalent at baseline (at the outset of the study).

    ➢ How you will document the level of bias occurring from overall and differential attrition rates.

    ➢ Sequential, Multiple Assignment, Randomized Trials (SMARTs)[12] represent one type of a randomized controlled trial that can be used to evaluate the sequence of interventions in an adaptive intervention. Clearly identify and provide a rationale for each stage of the SMART, including the critical decision point for each stage, and the randomization process that subsequently takes place at each critical decision point.

  o Regression discontinuity designs can also provide unbiased estimates of the effects of education interventions when there is a clear cutoff point on a standardized test or other instrument used to assign students or teachers to an intervention. If a regression discontinuity design is proposed, describe the following:

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[12] e.g., Lei, H., Nahum-Shani, I., Lynch, K., Oslin, D., & Murphy, S. A. (2012). A "SMART" design for building individualized treatment sequences. *Annual Review of Clinical Psychology, 8*, 14.1–14.28. doi: 10.1146/annurev-clinpsy-032511-143152.

- The appropriateness of the assignment variable, the assignment variable's resistance to manipulation, the level of independence of the cutoff point from the assignment variable, and the policy relevance of the cutoff point.

- The sensitivity analyses and robustness checks that will be used to assess the influence of key procedural or analytic decisions (e.g., functional forms and bandwidths) on the results.

- How you will determine that:
  - There is a true discontinuity at the cutoff point (and not at other points where a discontinuity would not be expected);
  - No manipulation of the assignment variable has occurred;
  - The treatment and comparison groups have similar baseline characteristics, especially around the cut-off point (i.e., they do not differ in ways that would indicate selection bias); and
  - There are high levels of compliance to assignment (i.e., most treatment group members receive the intervention and most comparison group members do not).

- o Single-case experimental designs are intended to demonstrate a causal or functional relationship between two variables using a small number of cases (e.g., students, classrooms).[13] *Single-case experimental designs are not descriptive case studies.* If a single-case experimental design is proposed:

  - Describe the repeated, systematic measurement of a dependent variable before, during, and after the active manipulation of an independent variable (i.e., intervention).

  Please see additional recommendations outlined below in *Additional Recommendations for Single-Case Experimental Designs Proposed as the Primary Design for Efficacy Studies.*

- o Quasi-experimental designs (other than a regression discontinuity design) can be proposed when randomization is not possible. If a quasi-experimental design is proposed:

  - Justify how the proposed design permits drawing causal conclusions about the effect of the intervention on the intended outcomes, explain how selection bias will be minimized or modeled (see Shadish, Cook, and Campbell, 2002), and discuss those 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.

  - Detail how you will ensure that the study will meet the WWC's standards for evidence with reservations as this is the highest standard that quasi-experimental designs can meet (e.g., by establishing baseline equivalence between treatment and comparison groups and preventing high and/or non-equivalent attrition).

- Describe and justify the counterfactual. In evaluations of education interventions, individuals in the comparison group typically receive some kind of treatment. It may be a

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[13] A case is a unit of intervention administration and data analysis. A case may be a single participant or a cluster of participants (e.g., a classroom or community).

well-defined alternative treatment or a less well-defined standard or frequent practice across the district or region. A clear description of the intervention and the counterfactual helps reviewers decide whether the intervention is sufficiently different from what the comparison group receives to produce different student education outcomes.

- Describe strategies or existing conditions that will reduce potential contamination between treatment and comparison groups.

- Discuss how your study, if well implemented, will meet WWC evidence standards (with or without reservations).[14]

Power Analysis: [15]

- Discuss the statistical power of the research design to detect a reasonably expected and minimally important effect of the intervention on student education outcomes and consider how the clustering of participants will affect statistical power.

- Identify the minimum effect of the intervention that you will be able to detect, justify why this level of effect would be expected from the intervention, and explain why this would be a practically important effect.

- Detail the procedure used to calculate either the power for detecting the minimum effect or the minimum detectable effect size. Include the following:

  o The statistical formula you used;

  o The parameters with known values used in the formula (e.g., number of clusters, number of participants within the clusters);

  o The parameters whose values are estimated and how those estimates were made (e.g., intraclass correlations, role of covariates);

  o Other aspects of the design and how they may affect power (e.g., stratified sampling/blocking, repeated observations); and

  o Predicted attrition and how it was addressed in the power analysis.

> *Include power analyses for all proposed causal analyses, including subgroup analyses.*
>
> *Include enough information so that reviewers can duplicate your power analysis.*

- Provide a similar discussion regarding power for any causal analyses to be done using subgroups of the proposed sample and any tests of mediation or moderation, even if those analyses are considered exploratory/secondary.

- For Sequential, Multiple Assignment, Randomized Trials (SMARTs), clearly identify your power to detect differences at each level of randomization as appropriate for your research questions.

Outcome Measures:

- Discuss the importance of the outcome measures you have selected. For example, 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, and disciplinary actions.

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[14] See the WWC's Standards Handbook, Version 4.0 at https://ies.ed.gov/ncee/wwc/Handbooks.
[15] Power analysis is not necessary for applicants proposing single-case experimental designs.

- Include student education outcome measures that will be sensitive to the change in performance that the intervention is intended to bring about. For example, applications to evaluate interventions to improve academic outcomes should include measures of achievement and/or measures of progress (e.g., test scores, grades, progression, graduation).

- For interventions designed to directly change the teaching and learning environment, provide measures of student education outcomes, as well as measures of the intermediate outcomes (e.g., teacher or leader behaviors) that are hypothesized to be directly linked to the intervention.

- Describe the psychometric properties (reliability and validity) of your student education outcome measures and intermediate outcome measures.

- If needed, you can propose devoting a short period of time (e.g., 2-6 months) to refining your outcome measures.

Implementation Study:

In addition to measuring levels of fidelity of implementation and considering them in the impact analysis, Efficacy and Follow-Up projects may conduct an implementation study. While not required, such analyses can strengthen your application. The primary goals of an implementation study are to better understand how an intervention is delivered and the factors (e.g., end user characteristics; classroom, school, and district organizational factors; attributes of the intervention) that influence implementation. Implementation analyses are usually descriptive or correlational, and help identify the key supports and inhibitors to implementation, and adaptations made in response to local context. The results may be used to improve the efficiency of the intervention e.g., through

> *Implementation analyses examine how to improve the implementation of an intervention by investigating the conditions necessary to support implementation, and adaptations end users have made in the intervention.*

improvements in design, use, and support; targeting or scaling the intervention; and/or preparing for adaptations to different local contexts. Relatedly, the results are expected to improve the intervention's theory of change, which may inform future designs of this and other interventions.

- Explain how you will study the implementation of the intervention.

Fidelity of Implementation of the Intervention and Comparison Group Practice:

Analyses of fidelity of implementation and comparison group practice help to confirm the integrity of evaluation studies.[16] Fidelity of implementation studies investigate whether the intervention was implemented as intended or, more helpfully, implemented at a level expected to produce beneficial student outcomes. Findings on comparison group practice, when compared or combined with fidelity findings, may confirm that there is a contrast between what the treatment and comparison groups receive. Together, they increase the confidence in the findings of an evaluation as they support both beneficial findings (e.g., an alternative explanation may be less acceptable once a treatment contrast is identified) and negative or zero impact findings (e.g., weak implementation and lack of treatment contrast are removed as possible causes for null effects).

- Identify the measures of the fidelity of implementation of the intervention and describe how they capture the core components of the intervention.
    - If the intervention includes training of the intervention's end users, also identify the measures of fidelity of implementation of the training/trainers.

- Identify the measures of comparison group practices.

- Show that measures of fidelity of implementation of the intervention and comparison group practice are sufficiently comprehensive and sensitive to identify and document critical differences between what the intervention and comparison groups receive.

- For Initial Efficacy studies, describe your plan for determining the fidelity of implementation of the intervention within the treatment group and the identification of practices in the comparison group.
    - Include early studies of fidelity of implementation of the intervention and comparison group practice to be completed within the first year that end users are to implement the intervention.
    - Include studies on the fidelity of training and coaching provided to those implementing the intervention.
    - If needed, you can propose devoting a short period of time (e.g., 2-6 months) to develop a measure of fidelity of implementation of the intervention or comparison group practice.

> *Measuring fidelity of implementation of the intervention and comparison group practice early on is essential to preventing a confounding of implementation failure and intervention failure.*

    - Include a plan for how you would respond if either low fidelity (of implementation or training) or similar comparison group practice is found in the early fidelity studies. Such actions are to prevent studies that find no impacts of an intervention but cannot determine whether the finding was due to the intervention or its implementation.
        - Because Efficacy Studies may take place under ideal or non-routine conditions, an early finding of low fidelity during the first year of implementation may be addressed by increasing implementation support and monitoring activities, addressing obstacles to implementation, replacing or supplementing the sample in ways that preserve the design.

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[16] Weiss, Bloom, and Brock (2014) provide a framework for understanding implementation within program evaluation.

> ➢ Findings of unexpected similar practice in the comparison group may be addressed by further differentiation of the intervention or additional data collection to determine how similar practice is in both groups.

- Describe your plan for incorporating the fidelity measures into your analysis.

- For Follow-up Studies of students, information on fidelity of implementation is not required if the students are no longer receiving the intervention.

- For Follow-up Studies of education personnel, describe how you will study fidelity of implementation in both the intervention and comparison groups.

- For Retrospective Studies, you are not required to include information on fidelity of implementation of the intervention and comparison group practices. However, if available, the inclusion of this information strengthens the application.

Data Analysis:

- Detail your data analysis procedures for all quantitative and qualitative analyses, including your impact study, any subgroup analyses, analysis of baseline equivalence, and your fidelity of implementation study.

  - o The Institute encourages the use of mixed methods research, defined as the integration of qualitative and quantitative data, to inform the implementation study or other analyses. For example, interviews, focus groups, or observations with administrators, teachers, or students can provide information to inform the research questions for, or interpretation of findings from, the analyses of quantitative data collected from school records or other sources.

- Make clear how the data analyses directly answer your research questions.

- Explain how you will measure and report effect sizes in ways that policymakers and practitioners can readily understand. For example, an efficacy study of a reading or math intervention might report on the number of months gained in reading or math skills as a result of the intervention.

- Address any clustering of students in classes and schools.

- Discuss how exclusion from testing and missing data will be handled in your analysis. If you intend to impute missing data, describe the approach you will use to provide unbiased estimates.

- If you intend to link multiple datasets, provide sufficient detail for reviewers to judge the feasibility of the linking plan.

Moderators and Mediators:

- While not required, the analysis of implementation, [moderators], and [mediators] can strengthen your application.

- Moderation Analyses - 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 education outcomes measured. Give particular consideration to factors that may affect the generalizability of the study (e.g., whether the intervention works for some groups of students but not others, or in schools or neighborhoods with particular characteristics).

- Mediation Analyses - Conduct exploratory analyses of potential mediators of the intervention. Most Efficacy Studies are not designed or powered to rigorously test the effects of specific mediating variables; however, exploratory analyses can be used to better understand potential mediators of the intervention.

Cost Analysis:

- The cost analysis is intended to help schools and districts understand the monetary costs of implementing the intervention (e.g., expenditures for personnel, facilities, equipment, materials, training, and other relevant inputs).

  o Describe how you will identify all potential expenditures and compute the following costs:

    ▪ Annual cost and a cost across the lifespan of the program.

    ▪ Cost at each level (e.g., state, district, school, classroom, student) individually as well as overall cost.

    ▪ Cost per component (for any intervention composed of multiple components).

    ▪ For new interventions (and for ongoing interventions where available), breakdown between start-up costs and maintenance costs.

    ▪ Intervention costs may be contrasted with the costs of comparison group practice to reflect the difference between them.

  o Describe what population of districts, schools, classrooms, and/or students will be captured by your cost analysis.

  o Retrospective studies and follow-up studies may, but are not required to, include a plan to conduct a cost analysis. If information about implementation cost is available, the inclusion of a plan to analyze those costs strengthens the application.

Cost-Effectiveness Analysis:

- The cost-effectiveness analysis is intended to consider together the cost of the intervention and the impact of the intervention. This allows schools, districts and states to compare different interventions and identify which are most likely to lead to the greatest gains in student outcomes for the lowest costs.

  o A cost-effectiveness analysis is expected for only the primary student outcome measure(s). The analysis should be conducted at the level that is most relevant for the intervention being studied, whether the school, classroom, or individual student level.

  o Describe the cost-effectiveness method you intend to use.[17]

  o If you are evaluating the impact of any specific component(s) of the intervention—in addition to the overall impact of the intervention—you should provide additional cost-effectiveness analyses for the separate components evaluated.

- If a cost-effectiveness analysis is not proposed, provide a rationale for why it cannot be done. For example:

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[17] Examples of methods used in the field include Columbia University's ingredients costing method (http://www.tc.columbia.edu/articles/2015/september/cost-effectiveness-analysis-made-easy-a-new-tool-from-teachers-college-/) for which a cost analysis tool has been developed (https://www.cbcsecosttoolkit.org/) and the UK's Education Endowment Foundation's approach https://educationendowmentfoundation.org.uk/public/files/Evaluation/Setting_up_an_Evaluation/EEF_guidance_to_evaluators_on_cost_evaluation_2016_revision_FINAL.pdf. Other accepted methods may also be proposed.

- Retrospective studies may not have access to data on costs and thus would not be able to conduct a cost-effectiveness analysis.
- In some cases, follow-up studies of students and follow-up studies of education personnel might not involve continued implementation of the intervention; thus, a cost-effectiveness analysis might be limited or impossible if the original study did not collect cost information and such cost information could not be reconstructed.

Timeline:

- Provide a timeline for each step in your evaluation, including such actions as sample selection and assignment, baseline data collection, intervention implementation, ongoing data collections, fidelity of implementation and comparison group practice study, impact analyses, implementation analyses, moderator and/or mediator analyses, cost analysis, and dissemination.

- Indicate procedures to guard against bias entering into the data collection process.

- Charts, tables, and figures representing your project's timeline can be placed in either the Project Narrative or Appendix C: Supplemental Charts, Tables, and Figures. However, discussion of your project's timeline is only allowed in the Project Narrative.

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

Recommendations for a Strong Application: The Institute recommends that you include the following in your Research Plan to strengthen the methodological rigor of the proposed single-case research.[18]

- Describe a research design plan that meets WWC evidence standards.[19]

- Provide a strong argument supporting the use of a single-case experimental design as opposed to a randomized controlled trial (e.g., students with low-incidence disabilities).

- Include outcome measures that are not strictly aligned with the intervention.

- Describe quantitative analyses, in addition to visual analysis, for analyzing the resulting data. You are encouraged to consider the use of between-case effect size in your analysis. [20]

c. **Personnel** – The purpose of this section is to describe the relevant expertise of your research team, the responsibilities of each team member, and each team member's time commitments.

Requirements: In order to be responsive and sent forward for peer review, applications under the Efficacy and Follow-Up goal **must** describe

(i) The research team.

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[18] See published work on advancing the rigor of single-case research designs (e.g., Kratochwill, T.R., and Levin, J.R. (Eds.). (2014). *Single-Case Intervention Research: Methodological and Statistical Advances.* Washington, D.C.: American Psychological Association).
[19] See the WWC's Standards Handbook, Version 4.0 at https://ies.ed.gov/ncee/wwc/Handbooks (primarily Appendix E).
[20] For more information, see Shadish, W.R., Hedges, L.V., Horner, R.H., and Odom, S.L. (2015). The Role of Between-Case Effect Size in Conducting, Interpreting, and Summarizing Single-Case Research (NCER 2015-002) Washington, DC: National Center for Education Research, Institute of Education Sciences, U.S. Department of Education. This report is available at http://ies.ed.gov/ncser/pubs/2015002/

Recommendations for a Strong Application: In order to address the above requirement, the Institute recommends that you include the following in your Personnel section to demonstrate that your team possesses the appropriate training and experience and will commit sufficient time to implement the proposed research.

- Identify and briefly describe the following for all key personnel (e.g., Principal Investigator, co-Principal Investigators, co-Investigators) on the project team regardless of whether they are located at the primary applicant institution or a subaward institution.

    o Roles and responsibilities within the project.

    o Qualifications to carry out the proposed work.

    o Percent of time and calendar months per year (academic plus summer) to be devoted to the project.

    o Past success at disseminating research findings in peer-reviewed scientific journals and to policymaker and practitioner audiences.

- Identify the key personnel responsible for the cost analysis and cost-effectiveness analysis and describe their qualifications to carry out these analyses.

- Describe additional personnel at the primary applicant institution and any subaward institutions along with any consultants.

- Include a plan to ensure the objectivity of the research if key personnel were involved in the development of the intervention, are from for-profit entities (including those involved in the commercial production or distribution of the intervention), or have a financial interest in the outcome of the research. Such a plan might include how assignment of units to treatment and comparison conditions, supervision of outcome data collection and coding, and data analysis are assigned to persons who were not involved in the development of the intervention and have no financial interest in the outcome of the evaluation.

- Identify the management structure and procedures that will be used to keep the project on track and ensure the quality of its work. This is especially important for projects involving multiple institutions carrying out different tasks that must be coordinated and/or integrated.

- If you have previously received an award from any source to evaluate an intervention, discuss any theoretical and practical contributions made by your previous work.

d. **Resources** – The purpose of this section is to describe both how you have the institutional capacity to complete a project of this size and complexity and your access to the resources you will need to successfully complete this project.

   Requirements: In order to be responsive and sent forward for peer review, applications under the Efficacy and Follow-Up goal **must** describe

   (i)   The resources to conduct the project.

   Recommendations for a Strong Application: In order to address the above requirement, the Institute recommends that you include the following in your Resources section to demonstrate that your team has a plan for acquiring or accessing the facilities, equipment, supplies, and other resources required to support the completion and dissemination of the proposed work and the commitments of each partner for the implementation and success of the project.

Resources to conduct the project:

- Describe your institutional capacity and experience to manage a grant of this size.

- Describe your access to resources available at the primary institution and any subaward institutions.

- Describe your plan for acquiring any resources that are not currently accessible, will require significant expenditures, and are necessary for the successful completion of the project (e.g., equipment, test materials, curriculum, training materials).

- Describe your access to the schools (or other authentic education settings) in which the research will take place. Include Letters of Agreement in Appendix E documenting the participation and cooperation of the schools. Convincing letters will convey that the organizations understand what their participation in the study will involve (e.g., annual student and teacher surveys, student assessments, classroom observations).

    o Include information about student, teacher, and school incentives, if applicable.

- Describe your access to any datasets that you will require. Include Letters of Agreement, data licenses, or existing Memoranda of Understanding (MOU) in Appendix E to document that you will be able to access the data for your proposed use.

Resources to disseminate the results:

- Describe your resources to carry out your plans to disseminate results from your evaluation, as described in the required Appendix A: Dissemination Plan.

- Note any specific team members, offices, or organizations expected to take part in your dissemination plans and their specific roles.

(2) Data Management Plan

Applications under the Efficacy and Follow-Up goal **must** include a Data Management Plan (DMP) placed in Appendix F. Your DMP (recommended length: no more than 5 pages) describes your plans for making the final research data from the proposed project accessible to others. **Applications that do not contain a DMP in Appendix F will be deemed nonresponsive to the Request for Applications and will not be accepted for review.** Resources that may be of interest to researchers in developing a data management plan can be found at http://ies.ed.gov/funding/researchaccess.asp.

DMPs are expected to differ depending on the nature of the project and the data collected. By addressing the items identified below, your DMP describes how you will meet the requirements of the Institute's policy for data sharing. The DMP should include the following:

- Plan for pre-registering the study in an education repository (e.g., SREE Registry of Efficacy and Effectiveness Studies).

- Type of data to be shared.

- Procedures for managing and for maintaining the confidentiality of Personally Identifiable Information.

- Roles and responsibilities of project or institutional staff in the management and retention of research data, including a discussion of any changes to the roles and responsibilities that will occur should the Project Director/Principal Investigator and/or co-Project Directors/co-Principal Investigators leave the project or their institution.

- Expected schedule for data access, including how long the data will remain accessible (at least 10 years) and acknowledgement that the timeframe of data accessibility will be reviewed at the annual progress reviews and revised as necessary.

- Format of the final dataset.

- Dataset documentation to be provided.

- Method of data access (e.g., provided by the Project Director/Principal Investigator, through a data archive) and how those interested in using the data can locate and access them.

- Whether or not users will need to sign a data use agreement and, if so, what conditions they must meet.

- Any circumstances that prevent all or some of the data from being made accessible. 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).

The costs of the DMP can be covered by the grant and should be included in the budget and explained in the budget narrative. The Institute's Program Officers will be responsible for reviewing the completeness of the proposed DMP. If your application is being considered for funding based on the scores received during the scientific peer review process but your DMP is determined incomplete, you will be required to provide additional detail regarding your DMP (see Pre-Award Requirements).

(3) Awards

An Efficacy and Follow-Up project **must** conform to the following limits on duration and cost:

Duration Maximums:

- The maximum duration of an **Initial Efficacy project is 5 years.**

- The maximum duration of a **Follow-Up or a Retrospective project is 3 years.**

Cost Maximums:

- The maximum award for an **Initial Efficacy project is $3,300,000** (total cost = direct costs + indirect costs).

- The maximum award for a **Follow-Up project is $1,100,000** (total cost = direct costs + indirect costs).

  o *Grant funds for follow-up projects cannot be used for implementation of the intervention.*

- The maximum award for a **Retrospective project is $700,000** (total cost = direct costs + indirect costs).

4. Replication: Efficacy and Effectiveness (Goal Four)

a) Purpose

The purpose of Replication: Efficacy and Effectiveness studies is to expand the body of evidence on education interventions that have been shown by prior rigorous research to produce positive impacts on student outcomes. Since 2013, the Institute has supported Effectiveness Studies that carry out the independent evaluation of fully developed education interventions with prior evidence of efficacy to determine whether they produce a beneficial impact on student education outcomes relative to a counterfactual when they are implemented by the end user under routine conditions in authentic education settings. Starting in FY 2019, the Institute will also support Efficacy Replication and Re-analysis Studies under Goal Four (see definitions below). All studies funded under Goal Four are expected to examine for whom an intervention works and under what conditions.

The main differences between Efficacy and Follow-up (Goal Three) and Replication: Efficacy and Effectiveness (Goal Four) are that under Goal Four, (1) the intervention must already have been found to have beneficial impacts on student education outcomes by at least one prior causal impact study and (2) the research plan must include a plan to conduct analyses of implementation and factors that moderate and/or mediate the impacts of the intervention.

The Institute supports three types of studies under Goal Four:

- Effectiveness Study – The independent evaluation of a fully developed education intervention with prior evidence of efficacy to determine whether it produces a beneficial impact on student education outcomes relative to a counterfactual when implemented under routine practice in authentic education settings.

- Efficacy Replication Study – An evaluation of a fully developed intervention with prior evidence of efficacy to determine whether it produces a beneficial impact on student outcomes relative to a counterfactual when it is implemented in authentic education settings. The evaluator may or may not be independent.

- Re-analysis Study – A study that re-analyzes existing data from a previous efficacy or effectiveness evaluation using the same or different analytic method in order to determine the reliability or reproducibility of findings from a previous evaluation (Patil, Peng, & Leek, 2016).

The Institute encourages both *direct* and *conceptual* replications under Goal Four (Schmidt, 2009).

- Direct replications use the same, or as similar as possible, research methods and procedures as a previous efficacy or effectiveness study to provide more robust evidence of the intervention's beneficial impact.

- Conceptual replications systematically vary certain aspects of a previous efficacy or effectiveness study's research methods or procedures in order to determine if similar impacts are found under different conditions. For example:

  o Researchers may propose to study the impacts of a previously evaluated intervention with a different populations of students (e.g., differences in socioeconomic status, race/ethnicity, prior achievement level, geographic location), teachers (e.g., specialists vs. generalists), and/or schools (e.g., those in state improvement programs vs. those not in such programs, rural vs. urban).

  o Researchers may also propose modifications in how an intervention is delivered (e.g., using technology to substitute for some functions performed by school personnel in a prior study, or shifting from active support by an intervention developer to implementation under routine conditions).

- Researchers who intend to study substantial revisions to an intervention that was evaluated previously should apply under Goal Three to conduct an initial efficacy study.

Projects under the Replication: Efficacy and Effectiveness goal will result in the following:

- Evidence regarding the impact of a fully developed intervention on relevant student education outcomes relative to a comparison condition using a research design that meets the Institute's What Works Clearinghouse evidence standards (with or without reservations http://ies.ed.gov/ncee/wwc).

- Conclusions on and revisions to the theory of change that guides the intervention and a discussion of the broader contributions to the theoretical and practical understanding of education processes and procedures.

- Information on how study findings – including intervention implementation and cost – fit in and contribute to the larger body of evidence on the intervention.

- Information needed for future research on the intervention.

  - If a beneficial impact is found, the identification of the organizational supports, tools, and procedures needed for sufficient implementation and replication of the core components of the intervention.

  - If no beneficial impact is found, an examination of why the findings differed from those of prior evaluations of the intervention and a determination of whether and what type of further research would be useful to revise the intervention and/or its implementation.

b) Requirements and Recommendations

Applications under Goal Four **must meet the requirements set out under (1) Project Narrative, and (2) Data Management Plan** in order to be responsive and sent forward for scientific peer review. The requirements are the minimum necessary for an application to be sent forward for scientific peer review.

In order to improve the quality of your application, the Institute offers recommendations following each set of Project Narrative requirements.

(1) Project Narrative

The Project Narrative (recommended length: no more than 25 pages) for an application under Goal Four **must** include four sections – Significance, Research Plan, Personnel, and Resources.

a. **Significance** – The purpose of this section is to explain why the Effectiveness, Efficacy Replication, or Re-Analysis Study is needed.

Requirements: In order to be responsive and sent forward for scientific peer review, applications under Goal Four **must** describe

(i) The intervention to be evaluated;

(ii) The evidence from at least one previous causal impact study; and

(iii) What type of study is proposed (i.e., Effectiveness, Efficacy Replication, or Re-analysis).

Recommendations for a Strong Application: In order to address the above requirements, the Institute recommends that you include the following in your Significance section to provide a compelling rationale for the proposed work.

- For Efficacy Replications and Effectiveness Studies, explain whether you are proposing a direct or conceptual replication and make clear how your study will make an important contribution to the evidence base for the intervention.
  - For conceptual replications: Describe which components of the prior study will remain the same and which will be modified (e.g., population of students, implementation context, outcome measures). Also, describe the practical and theoretical importance of the proposed variation(s) between the prior study and the proposed study.
- Describe the fully developed intervention (as applicable), including
  - The intervention's components;
  - The processes and materials (e.g., manuals, websites, training, coaching) that will be used to support implementation of the intervention; and
  - Evidence that the intervention is fully developed and ready for implementation in authentic education settings (e.g., all materials and implementation supports such as professional development are available).
- Summarize the evidence from at least one prior causal impact study[21] of the intervention that will justify the need for an Efficacy Replication, Effectiveness Study, or Re-analysis Study.
  - Describe the size and statistical significance of the effects that were found, indicate how any reported effect sizes were calculated, and discuss how the results show **a practically important impact on student outcomes large enough to justify the proposed study.**
  - Identify unanswered questions from the previous studies that would benefit from further investigation.
- For Efficacy Replications and Effectiveness Studies, describe the intervention's context.
  - Identify the target population and where implementation will take place.
  - Identify who the end users of the intervention are and describe how they will carry out implementation.
  - Describe the conditions under which the intervention will be implemented.
    - Ideal or non-routine conditions provide a more controlled setting under which the intervention may be more likely to have beneficial impacts. For example, ideal or non-routine conditions could include more implementation support than would be provided under routine practice in order to ensure adequate fidelity of implementation.
    - Routine conditions reflect the everyday practice occurring in classrooms, schools, and districts including the expected level of implementation that would take place if there were no study. If the study is to be implemented under routine conditions, describe the following:
      - The implementation of the intervention, making clear that it would be the same as for any similar school or district intending to use the intervention.
      - The level of implementation support provided by the developer or distributor, if applicable. This level of support should be no

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[21] The prior studies do not need to be Institute-funded projects.

greater than what a district or school would receive if not taking part in the study. If a greater level of implementation support is provided, then the evaluation is taking place under ideal or non-routine conditions.

- The heterogeneity of the sample in comparison with that of the target population.

o Justify the type of conditions proposed:

- ➤ If you propose implementation under ideal or non-routine conditions, discuss why the intervention is not ready for implementation under routine conditions and how this replication study will significantly advance our understanding of the intervention.

- ➤ If you propose implementation under routine conditions, provide evidence that the intervention is ready for implementation under the everyday practice occurring in classrooms and schools.

- Clearly describe the initial theory of change for your proposed intervention (Figure 3 provides an example of one way that you could conceptualize a simple theory of change) along with theoretical justifications and empirical evidence that support it.

Figure 3. A diagram of a simple theory of change.

o Your theory of change should describe the component or components of the planned intervention that are to lead to changes in one or multiple underlying processes, which in turn will foster better student education outcomes directly or through intermediate outcomes (e.g., changed teacher practices). A more complete theory of change could include further details such as the sample representing the target population, level of exposure to the components of the intervention, key moderators (such as setting, context, student and family characteristics), and the specific measures used for the outcomes.

o For interventions designed to directly affect the teaching and learning environment and, thereby, indirectly affect student education outcomes, clearly identify any intermediate outcomes that the intervention is designed to affect (e.g., teacher practices) and how these outcomes impact the student education outcomes of interest.

- Address why the intervention is likely to produce better student outcomes relative to current practice and the overall practical importance of the intervention (i.e., why education practitioners or policymakers should care about the results of the proposed evaluation).

- Address the future scalability of the intervention by considering factors such as the potential marker for the intervention, the resources and organizational structure necessary for the wider adoption and implementation of the intervention, and the potential commercialization of the intervention.

- For a Re-analysis Study relying on secondary analysis of existing data, explain the importance of re-analyzing data from a previous evaluation.

    o Discuss why a re-analysis study would be relevant compared to another type of replication.

    o Describe how the re-analysis will extend the previous investigation (e.g., by using a different analytic method and/or examining additional research questions).

- Describe the potential implications of your results for research, practice, and policy.

- In Appendix A, discuss how you will make the results of your proposed research available to a wide range of audiences in a manner that reflects the purpose of the Replication: Efficacy and Effectiveness goal.

b. **Research Plan** – The purpose of this section is to describe the evaluation of the intervention.

Requirements: In order to be responsive and sent forward for scientific peer review, applications under Goal Four **must** describe:

   (i) The research design;

   (ii) The power analysis; and

   (iii) Data analysis procedures, including plans for mediator and moderator analysis.

In addition, Efficacy Replication and Effectiveness Studies **must** include plans for:

   (iv) An implementation study;

   (v) A cost analysis; and

   (vi) A cost-effectiveness analysis, or a rationale for why a cost-effectiveness analysis cannot be done.

Recommendations for a Strong Application: In order to address the above requirements, the Institute recommends that you include the following in your Research Plan section to strengthen the methodological rigor of the proposed work.

If you propose a single-case experimental design for an Efficacy Replication project (these designs are not allowed for an Effectiveness Study), please see additional recommendations outlined below in *Additional Recommendations for Single-Case Experimental Designs Proposed as the Primary Design for Efficacy Studies.*

Sample and Setting:

- Discuss the population you intend to study and how your sample and sampling procedures will allow you to draw inferences for this population.

- Define your sample and sampling procedures for the proposed study, including justification for exclusion and inclusion criteria.

- 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.

- Describe the setting in which the study will take place (e.g., the size and characteristics of the school and/or the surrounding community) and how this may affect the generalizability of your study.

Research Design:

- For Re-Analysis Studies, describe the existing data and how it will be re-analyzed. Be clear on what the existing data will allow you to examine and what issues you will not be able to address due to a lack of information. This discussion should include what is known or could be determined about the intervention's fidelity of implementation and comparison group practice. Discuss the implications for interpreting your results due to a lack of such information.

- For Efficacy Replications and Effectiveness Studies, describe your research design.

    o Randomized controlled trials are preferred whenever feasible because they have the strongest internal validity for causal conclusions. If a randomized controlled trial is proposed, describe the following:

        ➢ The unit of randomization (e.g., student, classroom, teacher, or school) and a convincing rationale for this choice.

        ➢ Procedures for random assignment to condition and how the integrity of these procedures will be ensured.

        ➢ How you will document that treatment and comparison groups are equivalent at baseline (at the outset of the study).

        ➢ How you will document the level of bias occurring from overall and differential attrition rates.

        ➢ For an Efficacy Replication, Sequential, Multiple Assignment, Randomized Trials (SMARTs)[22] represent one type of a randomized controlled trial that can be used to evaluate the sequence of interventions in an adaptive intervention (SMART designs are not allowed as your primary research design for Effectiveness Studies). Clearly identify and provide a rationale for each stage of the SMART, including the critical decision point for each stage, and the randomization process that subsequently takes place at each critical decision point.

    o Regression discontinuity designs can also provide unbiased estimates of the effects of education interventions when there is a clear cutoff point on a standardized test or other instrument used to assign students or teachers to an intervention. If a regression discontinuity design is proposed, describe the following:

        ➢ The appropriateness of the assignment variable, the assignment variable's resistance to manipulation, the level of independence of the cutoff point from the assignment variable, and the policy relevance of the cutoff point.

        ➢ The sensitivity analyses and robustness checks that will be used to assess the influence of key procedural or analytic decisions (e.g., functional forms and bandwidths) on the results.

        ➢ How you will determine that:

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[22] e.g., Lei, H., Nahum-Shani, I., Lynch, K., Oslin, D., & Murphy, S. A. (2012). A "SMART" design for building individualized treatment sequences. *Annual Review of Clinical Psychology, 8*, 14.1–14.28. doi: 10.1146/annurev-clinpsy-032511-143152.

- There is a true discontinuity at the cutoff point (and not at other points where a discontinuity would not be expected);

- No manipulation of the assignment variable has occurred;

- The treatment and comparison groups have similar baseline characteristics (especially around the cut-off point), i.e., they do not differ in ways that would indicate selection bias; and

- There are high levels of compliance to assignment (i.e., most treatment group members receive the intervention and most comparison group members do not).

o For an Efficacy Replication, a single-case experimental design can be proposed (single-case experimental designs are not allowed as your primary research design for Effectiveness Studies). Single-case experimental designs are intended to demonstrate a causal or functional relationship between two variables using a small number of cases (e.g., students, classrooms).[23] *Single-case experimental designs are not descriptive case studies.* If a single-case experimental design is proposed:

➢ Describe the repeated, systematic measurement of a dependent variable before, during, and after the active manipulation of an independent variable (i.e., intervention).

o Quasi-experimental designs (other than a regression discontinuity design) can be proposed when randomization is not possible. If a quasi-experimental design is proposed:

➢ Justify how the proposed design permits drawing causal conclusions about the effect of the intervention on the intended outcomes, explain how selection bias will be minimized or modeled (see Shadish, Cook, and Campbell, 2002), and discuss any 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 meet the WWC's standards for evidence with reservations only, it is also important to detail how you will ensure that the study will meet these standards (e.g., by establishing baseline equivalence between treatment and comparison groups and preventing high and/or non-equivalent attrition).

- Describe and justify the counterfactual for all research designs. In evaluations of education interventions, individuals in the comparison group typically receive some kind of treatment. It may be a well-defined alternative treatment or a less well-defined standard or frequent practice across the district or region. A clear description of the intervention and the counterfactual helps reviewers decide whether the intervention is sufficiently different from what the comparison group receives to produce different student education outcomes.

o Compare the counterfactual in the proposed study to that in the previous study (or studies).

- Describe strategies or existing conditions that will reduce potential contamination between treatment and comparison groups.

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[23] A case is a unit of intervention administration and data analysis. A case may be a single participant or a cluster of participants (e.g., a classroom or community).

- Discuss how your study, if well implemented, will meet WWC evidence standards (with or without reservations).[24]

Power Analysis: [25]

- Discuss the statistical power of the research design to detect a reasonably expected and minimally important effect of the intervention on the focal student education outcomes and consider how the clustering of participants will affect statistical power.

- Identify the minimum effect of the program or policy that you will be able to detect, justify why this level of effect would be expected, and explain why this would be a practically important effect.

- Detail the procedure used to calculate either the power for detecting the minimum effect or the minimum detectable effect size. Include the following:

   o The statistical formula you used;

   o The parameters with known values used in the formula (e.g., number of clusters, number of participants within the clusters);

   o The parameters whose values are estimated and how those estimates were made (e.g., intraclass correlations, role of covariates);

   o Other aspects of the design and how they may affect power (e.g., stratified sampling/blocking, repeated observations); and

   o Predicted attrition and how it was addressed in the power analysis.

- Provide a similar discussion regarding power for any causal analyses to be done using subgroups of the proposed sample and any tests of mediation or moderation, even if those analyses are considered exploratory/secondary.

Outcome Measures:

- Discuss the importance of the outcome measures you have selected. For example, 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, and disciplinary actions.

> *Include power analyses for all proposed causal analyses, including subgroup analyses.*
>
> *Include enough information so that reviewers can duplicate your power analysis.*

- Include student education outcome measures that will be sensitive to the change in performance that the intervention is intended to bring about. For example, applications to evaluate interventions to improve academic outcomes should include measures of achievement and/or measures of progress (e.g., test scores, grades, progression, graduation).

- For interventions designed to directly change the teaching and learning environment, provide measures of student education outcomes, as well as measures of the intermediate outcomes (e.g., teacher or leader behaviors) that are hypothesized to be directly linked to the intervention.

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[24] See the WWC's Standards Handbook, Version 4.0 at https://ies.ed.gov/ncee/wwc/Handbooks.
[25] Power analysis is not necessary for applicants proposing single-case experimental designs.

- Describe the psychometric properties (reliability and validity) of your student education outcome measures and intermediate outcome measures.

- If needed, you can propose devoting a short period of time (e.g., 2-6 months) to refining your outcome measures.

Implementation Study:

In addition to examining levels of fidelity of implementation and considering them in the impact analysis (as described below), Efficacy Replication and Effectiveness projects must also include an implementation study. The primary goals of an implementation study are to better understand how an intervention is delivered and the factors (e.g., end user characteristics; classroom, school, and district organizational factors; attributes of the intervention) that influence implementation. Implementation analyses are usually descriptive or correlational, and help identify the key supports and inhibitors to implementation, and adaptations made in response to local context. The results may be used to improve the efficiency of the intervention(e.g., through improvements in design, use, and support; targeting or scaling the intervention; and/or preparing for adaptations to different local contexts). Relatedly, the results are expected to improve the intervention's theory of change which may inform future designs of this and other interventions.

> *Implementation analyses examine how to improve the implementation of an intervention by investigating the conditions necessary to support implementation, and adaptations end users have made in the intervention.*

- For Efficacy Replication and Effectiveness Studies:

  o Explain how you will study the implementation of the intervention.

- For Re-analysis Studies, you are not required to conduct an implementation study. However, if information on implementation is available, the inclusion of implementation analyses strengthens the application.

Fidelity of Implementation of the Intervention and Comparison Group Practice:

Analyses of fidelity of implementation and comparison group practice help to confirm the integrity of evaluation studies.[26] Fidelity of implementation studies may confirm that the intervention was implemented or, more helpfully, implemented at a level expected to produce beneficial student outcomes. Findings on comparison group practice, when compared or combined with fidelity findings, may confirm that there is a contrast between what the treatment and comparison group receive. Together, they increase the confidence in the findings of an evaluation as they support both beneficial findings (an alternative explanation may be less acceptable once a treatment contrast is identified) and negative or zero impact findings (e.g., weak implementation and lack of treatment contrast are removed as possible causes for null effects).

- Identify the measures of the fidelity of implementation of the intervention and describe how they capture the core components of the intervention.

  o If the intervention includes training of the intervention's end users, also identify the measures of fidelity of implementation of the training/trainers.

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[26] Weiss, Bloom, and Brock (2014) provide a framework for understanding implementation within program evaluation.

- Identify the measures of comparison group practices.

- Show that measures of fidelity of implementation of the intervention and comparison group practice are sufficiently comprehensive and sensitive to identify and document critical differences between what the intervention and comparison groups receive.

- Describe your plan for determining the fidelity of implementation of the intervention within the treatment group and the identification of practice in the comparison group.

> *Measuring fidelity of implementation of the intervention and comparison group practice early on is essential to preventing a confounding of implementation failure and intervention failure.*

  - o Include early studies of fidelity of implementation of the intervention and comparison group practice to be completed within the first year that end users are to implement the intervention.

  - o Include studies on the fidelity of training and coaching provided to those implementing the intervention.

- Include a plan for how you would respond if either low fidelity (of implementation or training) or similar comparison group practice is found in the early fidelity studies. Such actions are to prevent studies that find no impacts of an intervention but cannot determine whether the finding was due to the intervention or its implementation.

  - o For evaluations conducted under ideal or non-routine conditions, an early finding of low fidelity during the first year of implementation may be addressed by increasing implementation support and monitoring activities, addressing obstacles to implementation, or replacing or supplementing the sample in ways that preserve the design.

  - o Findings of unexpected similar practice in the comparison group may be addressed by further differentiation of the intervention or additional data collection to determine how similar practice is in both groups.

- Describe your plan for incorporating the fidelity measures into your impact analysis. For example:

  - o To examine how different levels of fidelity are related to the intervention's impacts.

  - o To identify what level of overall fidelity or levels of fidelity for core components are associated with beneficial impacts.

- For Re-analysis Studies, you are not required to include information on fidelity of implementation of the intervention and comparison group practices. However, if available, the inclusion of this information strengthens the application.

Data Analysis:

- Detail your data analysis procedures for all quantitative and qualitative analyses, including your impact study, any subgroup analyses, analysis of baseline equivalence, and your fidelity of implementation study.

- The Institute encourages the use of mixed methods research, defined as the integration of qualitative and quantitative data, to inform the implementation study or other analyses. For example, interviews, focus groups, or observations with administrators, teachers, or students can provide information to inform the research questions for, or interpretation of findings from, the analyses of quantitative data collected from school records or other sources.

- Explain how you will measure and report effect sizes in ways that policymakers and practitioners can readily understand. For example, an evaluation of a reading or math intervention might report on the number of months gained in reading or math skills as a result of the intervention.

- Make clear how the data analyses directly answer your research questions.

- Address any clustering of students in classes and schools.

- Discuss how exclusion from testing and missing data will be handled in your analysis. If you intend to impute missing data, describe the approach you will use to provide unbiased estimates.

- If you intend to link multiple datasets, provide sufficient detail for reviewers to judge the feasibility of the linking plan.

- Describe how the results from the proposed Efficacy Replication, Effectiveness Study, and Re-analysis Study will be compared and analyzed with respect to prior studies of the same intervention.

Moderators and Mediators:

- Moderation Analyses - 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 education outcomes measured. Give particular consideration to factors that may affect the generalizability of the study (e.g., whether the intervention works for some groups of students but not others, or in schools or neighborhoods with particular characteristics).

- Mediation Analyses - Conduct analyses of potential mediators of the intervention for which there is a strong theoretical and/or empirical base to expect they will mediate the impact of the intervention on the student education outcomes measured.

  - If a previous evaluation has identified a potentially important mediator through exploratory analyses, consider whether you can design an evaluation to causally test that mediator.

Cost Analysis:

- The cost analysis is intended to help schools, districts, and states understand the monetary costs of implementing the intervention (e.g., expenditures for personnel, facilities, equipment, materials, training, and other relevant inputs).

  - Describe how you will identify all potential expenditures and compute the following costs.

    - Annual cost and a cost across the lifespan of the program.

    - Cost at each level (e.g., state, district, school, classroom, student) individually, as well as overall cost.

    - If an intervention is composed of multiple components, cost per component.

- For new interventions (and for ongoing interventions where available) breakdown between start-up costs and maintenance costs.

- Intervention costs may be contrasted with the costs of comparison group practice to reflect the difference between them.

o Describe what population of districts, schools, classrooms, and/or students will be captured by your cost analysis.

o Re-analysis studies may, but are not required to, include a plan to conduct a cost analysis. If information about implementation cost is available, the inclusion of a plan to analyze those costs strengthens the application.

Cost-effectiveness Analysis:

- The cost-effectiveness analysis is intended to consider together the cost of the intervention and the impact of the intervention. This allows schools, districts and states to compare different interventions and identify which are most likely to lead to the greatest gains in student outcomes for the lowest costs.

  o A cost-effectiveness analysis is required only for the primary student outcome measure(s). The analysis should be conducted at the level that is most relevant for the intervention being studied, whether the school, classroom, or individual student level.

  o Describe the cost-effectiveness method you intend to use.

  o If you are evaluating the impact of any specific component(s) of the intervention—in addition to the overall impact of the intervention—you should provide additional cost-effectiveness analysis for the separate components evaluated.

- If a cost-effectiveness analysis is not proposed, provide a rationale for why it cannot be done. For example:

  o Re-analysis studies may not have access to data on costs and thus would not be able to conduct a cost effectiveness analysis.

Timeline:

- Provide a timeline for each step in your evaluation, including such actions as sample selection and assignment, baseline data collection, intervention implementation, ongoing data collections, fidelity of implementation and comparison group practice study, impact analyses, implementation analyses, moderator and/or mediator analyses, cost analysis, and dissemination.

- Indicate procedures to guard against bias entering into the data collection process.

- Charts, tables and figures representing your project's timeline can be placed in either the Project Narrative or Appendix C: Supplemental Charts, Tables, and Figures. However, discussion of your project's timeline is only allowed in the Project Narrative.

Additional Recommendations for Single-Case Experimental Designs Proposed as the Primary Design for Efficacy Replication and Effectiveness Studies

Recommendations for a Strong Application: The Institute recommends that you include the following in your Research Plan to strengthen the methodological rigor of the proposed single-case research.[27]

- o Describe a research design plan that meets WWC evidence standards.[28]

- o Provide a strong argument supporting the use of a single-case experimental design as opposed to a randomized controlled trial (e.g., students with low-incidence disabilities).

- o Include outcome measures that are not strictly aligned with the intervention.

- o Describe quantitative analyses, in addition to visual analysis, for analyzing the resulting data. You are encouraged to consider the use of between-case effect size in your analysis. [29]

c. **Personnel** – The purpose of this section is to describe the relevant expertise of your research team, the responsibilities of each team member, and each team member's time commitments.

Requirements: In order to be responsive and sent forward for peer review, applications under Goal Four **must** describe

(i)   The research team.

Recommendations for a Strong Application: In order to address the above requirement, the Institute recommends that you include the following in your Personnel section to demonstrate that your team possesses the appropriate training and experience and will commit sufficient time to competently implement the proposed research.

- Identify and briefly describe the following for all key personnel (e.g., Principal Investigator, co-Principal Investigators, co-Investigators) on the project team regardless of whether they are located at the primary applicant institution or a subaward institution:

    - o Roles and responsibilities within the project.

    - o Qualifications to carry out the proposed work.

    - o Percent of time in calendar months per year (academic plus summer) to be devoted to the project.

    - o Past success at disseminating research findings in peer-reviewed scientific journals and other venues targeting policymakers and practitioners.

- Identify the key personnel responsible for the cost analysis and cost-effectiveness analysis and describe their qualifications to carry out these analyses.

- Describe additional personnel at the primary applicant institution and any subaward institutions along with any consultants.

- If an independent evaluation is proposed:

    - o Show that the key personnel who are responsible for the design of the evaluation, the assignment to treatment and comparison groups, and the

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[27] See published work on advancing the rigor of single-case research designs (e.g., Kratochwill, T.R., and Levin, J.R. (Eds.). (2014). *Single-Case Intervention Research: Methodological and Statistical Advances.* Washington, D.C.: American Psychological Association).
[28] See the WWC's Standards Handbook, Version 4.0 at https://ies.ed.gov/ncee/wwc/Handbooks (primarily Appendix E).
[29] For more information, see Shadish, W.R., Hedges, L.V., Horner, R.H., and Odom, S.L. (2015). The Role of Between-Case Effect Size in Conducting, Interpreting, and Summarizing Single-Case Research (NCER 2015-002) Washington, DC: National Center for Education Research, Institute of Education Sciences, U.S. Department of Education. This report is available at http://ies.ed.gov/ncser/pubs/2015002/

data analyses did not and do not participate in the development or distribution of the intervention and do not have a financial interest in the intervention.

   o   The developer or distributor of the intervention should not serve as Principal Investigator on the project. However, the developer or distributor of the intervention may be a part of the project team if they are providing routine implementation support (e.g., professional development) that is no greater than a district or school would routinely receive (e.g., if not taking part in the study). If the developer or distributor is included in this way, discuss how their involvement will not jeopardize the objectivity of the evaluation of the impact of the intervention.

- If an independent evaluation is <u>not</u> proposed and key personnel were involved in the development of the intervention, are from for-profit entities (including those involved in the commercial production or distribution of the intervention), or have a financial interest in the outcome of the research, include a plan to ensure the objectivity of the research.

- Identify the management structure and procedures that will be used to keep the project on track and ensure the quality of its work. This is especially important for projects involving multiple institutions carrying out different tasks that must be coordinated and/or integrated.

- If you have previously received an award from any source to evaluate an intervention, discuss any theoretical and practical contributions made by your previous work.

d. **Resources** – The purpose of this section is to describe both how you have the institutional capacity to complete a project of this size and complexity and your access to the resources you will need to successfully complete this project.

Requirements: In order to be responsive and sent forward for scientific peer review, applications under the Replication: Efficacy and Effectiveness goal **must** describe

   (i)   The resources to conduct the project.

Recommendations for a Strong Application: In order to address the above requirement, the Institute recommends that you include the following in your Resources section to demonstrate that your team has a plan for acquiring or accessing the facilities, equipment, supplies, and other resources required to support the completion and dissemination of the proposed work and the commitments of each partner for the implementation and success of the project.

Resources to conduct the project:

- Describe your institutional capacity and experience to manage a grant of this size.

- Describe your access to resources available at the primary institution and any subaward institutions.

- Describe your plan for acquiring any resources that are not currently accessible, will require significant expenditures, and are necessary for the successful completion of the project (e.g., equipment, test materials, curriculum, training materials).

- Describe your access to the schools (or other authentic education settings) in which the research will take place. Include Letters of Agreement in Appendix E documenting the participation and cooperation of the schools. Convincing letters will convey that the

organizations understand what their participation in the study will involve (e.g., annual student and teacher surveys, student assessments, classroom observations).

- o Include information about student, teacher, and school incentives, if applicable.
- Describe your access to any datasets that you will require. Include Letters of Agreement, data licenses, or existing Memoranda of Understanding in Appendix E to document that you will be able to access the data for your proposed use.

Resources to disseminate the results:

- Describe your resources to carry out your plans to disseminate results from your evaluation, as described in the required Appendix A: Dissemination Plan.

  - o Note any specific team members, offices, or organizations expected to take part in your dissemination plans and their specific roles.

(2) Data Management Plan

Applications under Goal Four **must** include a Data Management Plan (DMP) placed in Appendix F. Your DMP (recommended length: no more than 5 pages) describes your plans for making the final research data from the proposed project accessible to others. **Applications that do not contain a DMP in Appendix F will be deemed nonresponsive to the Request for Applications and will not be accepted for review**. Resources that may be of interest to researchers in developing a data management plan can be found at http://ies.ed.gov/funding/researchaccess.asp.

DMPs are expected to differ depending on the nature of the project and the data collected. By addressing the items identified below, your DMP describes how you will meet the requirements of the Institute's policy for data sharing. The DMP should include the following:

- Plan for pre-registering the study in an education repository (e.g., SREE Registry of Efficacy and Effectiveness Studies).

- Type of data to be shared.

- Procedures for managing and for maintaining the confidentiality of Personally Identifiable Information.

- Roles and responsibilities of project or institutional staff in the management and retention of research data, including a discussion of any changes to the roles and responsibilities that will occur should the Project Director/Principal Investigator and/or co-Project Directors/co-Principal Investigators leave the project or their institution.

- Expected schedule for data access, including how long the data will remain accessible (at least 10 years) and acknowledgement that the timeframe of data accessibility will be reviewed at the annual progress reviews and revised as necessary.

- Format of the final dataset.

- Dataset documentation to be provided.

- Method of data access (e.g., provided by the Project Director/Principal Investigator, through a data archive) and how those interested in using the data can locate and access them.

- Whether or not users will need to sign a data use agreement and, if so, what conditions they must meet.

- Any circumstances that prevent all or some of the data from being made accessible. 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).

The costs of the DMP can be covered by the grant and should be included in the budget and explained in the budget narrative. The Institute's Program Officers will be responsible for reviewing the completeness of the proposed DMP. If your application is being considered for funding based on the scores received during the scientific peer review process but your DMP is determined incomplete, you will be required to provide additional detail regarding your DMP (see Pre-Award Requirements).

(3)   Awards

A Goal Four project **must** conform to the following limits on duration and cost:

Duration Maximums:

- The maximum duration of an **Efficacy Replication or Effectiveness Study is 5 years.**

- The maximum duration of a **Re-analysis Study is 3 years.**

Cost Maximums:

- The maximum award for an **Efficacy Replication is $3,600,000** (total cost = direct costs + indirect costs).

- The maximum award for an **Effectiveness Study is $4,000,000** (total cost = direct costs + indirect costs).

- The maximum award for a **Re-analysis Study is $700,000** (total cost = direct costs + indirect costs).

5. Measurement (Goal Five)

a) Purpose

The Measurement goal supports (1) the development of new assessments or refinement of existing assessments (Development/Refinement Projects) or (2) the validation of existing assessments for specific purposes, contexts, and populations (Validation Projects). Measurement projects can address a wide variety of measures such as academic tests, behavioral measures, observational tools, informal assessments, and school quality indicators. Measurement projects can address a range of purposes such as measuring knowledge, skills, and abilities; guiding instruction; improving educator practice; evaluating educator job performance; or assessing the effectiveness of schools or school systems. Measurement projects can develop/validate assessments for use by schools or for research purposes. **All measurement projects must link the assessment to student education outcomes.**

Development/Refinement Projects will result in the following:
- A fully developed version of the proposed assessment or refinement of an existing assessment.
- A detailed description of the assessment or refinements to an existing assessment and their intended use.
- A detailed description of the iterative development processes used to develop or refine the assessment, including field-testing procedures and processes for item revision.

All projects under the Measurement goal will result in the following:
- A well-specified assessment framework that provides the rationale for the assessment, the theoretical basis that underlies its design, and its validation activities.
- A detailed description of the validation activities.
- Evidence of the reliability and validity of the assessment for the specified purpose(s), population(s), and context(s).

> ### *Assessments*
>
> Refers to "any systematic method of obtaining information, used to draw inferences about characteristics of people, objects, or programs; a systematic process to measure or evaluate the characteristics or performance of individuals, programs, or other entities, for purposes of drawing inferences; sometimes used synonymously with test" (AERA, 2014).
>
> ### *Validation*
>
> Refers to the process of collecting evidence to support the use of a measure for a specific purpose, context, and population.

b) Requirements and Recommendations

Applications under the Measurement goal **must meet the requirements set out under (1) Project Narrative** in order to be responsive and sent forward for scientific peer review. The requirements are the minimum necessary for an application to be sent forward for scientific peer review.

In order to improve the quality of your application, the Institute offers recommendations following each set of Project Narrative requirements.

(1) Project Narrative

The Project Narrative (recommended length: no more than 25 pages) for a Measurement project application **must** include four sections – Significance, Research Plan, Personnel, and Resources.

   a. **Significance** – The purpose of this section is to explain why it is important to develop a new assessment, refine an existing assessment, and/or to validate the assessment for a specific setting, purpose, and/or population.

Requirements: In order to be responsive and sent forward for scientific peer review, applications under the Measurement goal **must** describe

    (i)   The new or existing assessment to be developed/refined and/or validated.

Recommendations for a Strong Application: In order to address the above requirements, the Institute recommends that you include the following in your Significance section to provide a compelling rationale for the proposed Measurement work.

Development/Refinement Projects:

- Describe the specific need for developing or refining the assessment, the potential market for such an assessment, and the potential commercialization of the assessment. **Discuss how the results of this work will be important both to the field of special education and early intervention research and to education practice and education stakeholders (e.g., practitioners and policymakers).**

- Identify any current assessments that address this need and explain why they are not satisfactory. Contrast the new assessment 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 (1) it is sufficiently different from current assessments and does not suffer from the same shortcomings, (2) it has a strong theoretical or empirical basis, and (3) its implementation appears feasible for researchers, teachers, and schools given their resource constraints (e.g., time, funds, personnel, schedules).

> ### *Assessment Framework*
>
> - Operational definition(s) of the <u>construct</u>(s) of measurement.
>
> - Theoretical model showing how construct(s) are related to each other and/or external variables.
>
> - Description of how the assessment provides evidence of the construct(s) identified in the rationale.
>
> - Description of the rationale for how and why performance on the assessment items supports inferences or judgments regarding the construct(s) of measurement.
>
> - Description of the intended use(s) and population(s) for which the assessment is meant to provide valid inferences.

Validation Projects:

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

- Identify any current validation evidence for this assessment and explain why it is not satisfactory for the proposed purpose(s), context(s), or population(s).

All Measurement Projects:

- Describe the assessment framework and the alignment between it and the proposed validation activities (e.g., how the validation activities will produce evidence to support the claims of the assessment framework).

- If you are applying for a second Measurement award to further validate an assessment that was the focus of a previous Measurement award, 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 Appendix A, discuss how you will make the results of your proposed research available to a wide range of audiences in a manner that reflects the purpose of the Measurement Goal.

b. **Research Plan** – The purpose of this section is to describe the methodology you will use to develop or refine the assessment, and/or document the validity of your assessment, and establish its link to student education outcomes.

Requirements: In order to be responsive and sent forward for peer review, applications under the Measurement goal **must** describe

(i)   The methods for developing/refining and/or validating an assessment, and

(ii)   Data analysis procedures.

Recommendations for a Strong Application: In order to address the above requirements, the Institute recommends that you include the following in your Research Plan section to strengthen the methodological rigor of the proposed measurement project.

Development/Refinement Projects:
- Describe the iterative procedures for developing, field testing, and selecting items to be used in the assessment and for obtaining representative responses to items.

- Describe the 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(s) that will be applied.

- Describe the procedures for demonstrating adequate construct coverage and minimizing the influence of factors irrelevant to the construct.

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

- Describe the process 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).

- Describe the plans for examining the feasibility of use of the assessment for the intended purpose.

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

- If the proposed assessment is used to measure growth, describe the procedures for establishing a developmental scale (i.e., vertical equating).

All Measurement Projects:
- Identify 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.

- Describe the procedures for determining the reliability of the assessment for the intended purpose and population.

- Identify the types of validity evidence to be collected. For example, validity evidence can be based on test content, internal structure, response processes, or relations to other variables via predictive, concurrent, convergent, or discriminant relationships. Provide justification for the adequacy of the selected types of evidence to support use of the assessment for the proposed purpose, population, and context.

- Describe the statistical models and analyses that will be used (e.g., structural equation modeling, type of IRT model).

- If you expect schools or other users to purchase the assessment after it is developed, explain how you will capture and report information on its cost.

Timeline:
- Provide a timeline for each step in your project including such actions as measurement development (if applicable), sample selection and assignment, data collection, validation activities, data analysis, and dissemination.

- Timelines may be placed in either the Project Narrative or Appendix C: Supplemental Charts, Tables, and Figures but may only be discussed in the Project Narrative.

c. **Personnel** – The purpose of this section is to describe the relevant expertise of your research team, the responsibilities of each team member, and each team member's time commitments.

   Requirements: In order to be responsive and sent forward for peer review, applications under the Measurement goal **must** describe

   (i) The research team.

   Recommendations for a Strong Application: In order to address the above requirement, the Institute recommends that you include the following in your Personnel section to demonstrate that your team possesses the appropriate training and experience and will commit sufficient time to competently implement the proposed research.

- Describe a research team that collectively demonstrates the expertise in content domain(s), assessment development and administration, psychometrics, and statistical analysis as appropriate to support your scope of work. It will 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.

- Identify and briefly describe the following for all key personnel (e.g., Principal Investigator, co-Principal Investigators, co-Investigators) on the project team regardless of whether they are located at the primary applicant institution or a subaward institution.

   o Roles and responsibilities within the project.

   o Qualifications to carry out the proposed work.

   o Percent of time and calendar months per year (academic plus summer) to be devoted to the project.

   o Past success at disseminating research findings in peer-reviewed scientific journals and to policymaker and practitioner audiences.

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

- Describe additional personnel at the primary applicant institution and any subaward institutions along with any consultants.

- Identify the management structure and procedures that will be used to keep the project on track and ensure the quality of its work. This is especially important for projects involving multiple institutions carrying out different tasks that must be coordinated and/or integrated.

- If you have previously received a Measurement award and are applying for a grant to develop/refine and/or validate a new assessment, 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.

d. **Resources** – The purpose of this section is to describe the institutional capacity and resources to complete a project of this size and complexity to successfully complete this project.

Requirements: In order to be responsive and sent forward for peer review, applications under the Measurement goal **must** describe

(i) The resources to conduct the project.

Recommendations for a Strong Application: In order to address the above requirement, the Institute recommends that you include the following in your Resources section to demonstrate that your team has a plan for acquiring or accessing the facilities, equipment, supplies, and other resources required to support the completion and dissemination of the proposed Measurement work and the commitments of each partner for the implementation and success of the project.

Resources to conduct the project:

- Describe your institutional capacity and experience to manage a grant of this size.

- Describe your access to resources available at the primary institution and any subaward institutions.

- Describe your plan for acquiring any resources that are not currently accessible, will require significant expenditures, and are necessary for the successful completion of the project (e.g., equipment, test materials, curriculum, training materials).

- Describe your access to the schools (or other authentic education settings) in which the research will take place. Include Letters of Agreement in Appendix E documenting the participation and cooperation of the schools. Convincing letters will convey that the organizations understand what their participation in the study will involve (e.g., annual student and teacher surveys, student assessments, classroom observations).
  - Include information about student, teacher, and school incentives, if applicable.

- Describe your access to any datasets that you will require. Include Letters of Agreement, data licenses, or existing Memoranda of Understanding (MOU) in Appendix E to document that you will be able to access the data for your proposed use.

Resources to disseminate the results:

- Describe your resources to carry out your plans to disseminate results from your measurement study, as described in the required Appendix A: Dissemination Plan.
  - Note any specific team members, offices, or organizations expected to take part in your dissemination plans and their specific roles.

(2)   Awards

A Measurement project **must** conform to the following limits on duration and cost:

Duration Maximums:

- The maximum duration of a **Measurement project is 4 years.**

Cost Maximums:

- The maximum award for a **Measurement project is $1,400,000** (total cost = direct costs + indirect costs).

PART IV: COMPETITION REGULATIONS AND REVIEW CRITERIA

A. FUNDING MECHANISMS AND RESTRICTIONS

1. Mechanism of Support

The Institute intends to award grants pursuant to this Request for Applications.

2. Funding Available

Although the Institute intends to support the research topics and goals 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 makes its awards to the highest quality applications, as determined through scientific peer review, regardless of topic or goal.

The size of the award depends on the research goal and scope of the project. Please attend to the duration and budget maximums set for each goal in Part III: Goal Descriptions and Requirements (and described below).

Research Goal	Maximum Grant Duration	Maximum Grant Award
Exploration	Secondary Data Analysis only: 2 years	$600,000
	Primary Data Collection and Analysis: 4 years	$1,400,000
Development and Innovation	4 years	$1,400,000
Efficacy and Follow-up	Initial Efficacy: 5 years	$3,300,000
	Follow-up: 3 years	$1,100,000
	Retrospective: 3 years	$700,000
Replication: Efficacy and Effectiveness	Efficacy Replication: 5 years	$3,600,000
	Effectiveness Study: 5 years	$4,000,000
	Re-analysis Study: 3 years	$700,000
Measurement	4 years	$1,400,000

3. Special Considerations for Budget Expenses

Indirect Cost Rate

When calculating your expenses for research conducted in field settings, you should apply your institution's federally negotiated off-campus indirect cost rate. Questions about indirect cost rates should be directed to the U.S. Department of Education's Indirect Cost Group http://www2.ed.gov/about/offices/list/ocfo/fipao/icgindex.html.

Institutions, both primary grantees and subawardees, not located in the territorial United States cannot charge indirect costs.

Meetings and Conferences

If you are requesting funds to cover expenses for hosting meetings or conferences, please note that there are statutory and regulatory requirements in determining whether costs are reasonable and necessary. Please refer to OMB's Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards (Uniform Guidance), 2 CFR, §200.432 Conferences.

In particular, federal grant funds cannot be used to pay for alcoholic beverages or entertainment, which includes costs for amusement, diversion, and social activities. In general, federal funds may not be used to pay for food. A grantee hosting a meeting or conference may not use grant funds to pay for food for conference attendees unless doing so is necessary to accomplish legitimate meeting or conference business. You may request funds to cover expenses for working meetings (e.g., working lunches); however, the Institute will determine whether these costs are allowable in keeping with the Uniform Guidance Cost Principles. Grantees are responsible for the proper use of their grant awards and may have to repay funds to the Department if they violate the rules for meeting- and conference-related expenses or other disallowed expenditures.

4. 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.

5. Applicable Regulations

Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards (Uniform Guidance) codified at CFR Part 200. The Education Department General Administrative Regulations (EDGAR) in 34 CFR parts 77, 81, 82, 84, 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.

B. ADDITIONAL AWARD REQUIREMENTS

1. Public Availability of Data and Results

You must include a Data Management Plan (DMP) in Appendix F: Data Management Plan if you are submitting an Efficacy and Follow-Up or a Replication: Efficacy and Effectiveness application. The scientific peer review process will not include the DMP in the scoring of the scientific merit of the application. Instead, the Institute's Program Officers will be responsible for reviewing the completeness of the proposed DMP. The costs of the DMP can be covered by the grant and should be included in the budget and explained in the budget narrative.

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 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.

2. Special Conditions on Grants

The Institute may impose special conditions on a grant pertinent to the proper implementation of key aspects of the proposed research design, or if the 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.

3. Demonstrating Access to Data and Authentic Education Settings

The research you propose to do under a specific topic and goal will most likely require that you have (or will obtain) access to authentic education settings (e.g., classrooms, schools, districts), secondary datasets, or studies currently under way. In such cases, you will need to provide evidence that you have access to these resources prior to receiving funding. Whenever possible, include Letters of Agreement in Appendix E 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 doing any of the following:

- *Conducting research in or with authentic education settings* – If your application is being considered for funding based on scientific merit scores from the scientific peer review panel and your research relies on access to authentic education 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 will ask you to provide documentation that the settings originally recruited for the application are still willing to partner in the research.

- *Using secondary datasets* – If your application is being considered for funding based on scientific merit scores from the scientific peer review panel and your research relies on access to secondary datasets (e.g., federally collected datasets, 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 datasets in order to receive the grant. This means that if you do not have permission to use the proposed datasets at the time of application, you must provide documentation to the Institute from the entity controlling the dataset(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 dataset prior to submitting your application, the Institute will ask you to provide updated documentation indicating that you still have permission to use the dataset to conduct the proposed research during the project period.

- *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 should be one of the members of the research team applying for the grant to conduct the new project.

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.

C. OVERVIEW OF APPLICATION AND PEER REVIEW PROCESS

1. Submitting a Letter of Intent

The Institute strongly encourages potential applicants to submit a Letter of Intent by June 21, 2018. Letters of Intent are optional, non-binding, and not used in the scientific peer review of a subsequent application. However, when you submit a Letter of Intent, one of the Institute's Program Officers will contact you regarding your proposed research to offer assistance. The Institute also uses the Letter of Intent to identify the expertise needed for the scientific peer review panels and to secure a sufficient number of reviewers to handle the anticipated number of applications. Should you miss the deadline for submitting a Letter of Intent, you still may submit an application. If you miss the Letter of Intent deadline, the Institute asks that you inform the relevant Program Officer of your intention to submit an application.

Letters of Intent are submitted online at https://iesreview.ed.gov. **Select the Letter of Intent form for the topic under which you plan to submit your application**. The online submission form contains fields for each of the seven content areas listed below. Use these fields to provide the requested information. The project description should be single-spaced and is recommended to be no more than one page (about 3,500 characters).

- Descriptive title

- Topic and goal that you will address

- Brief description of the proposed project

- Name, institutional affiliation, address, telephone number and email address of the Principal Investigator and any co-Principal Investigators

- Name and institutional affiliation of any key collaborators and contractors

- Duration of the proposed project (attend to the Duration maximums for each goal)

- Estimated total budget request (attend to the Budget maximums for each goal)

2. Resubmissions and Multiple Submissions

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) (see Part VI.E.1) that the FY 2019 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). 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 Appendix B: Response to Reviewers (see Part V.D.4.). Revised and resubmitted applications will be reviewed according to this FY 2019 Request for Applications.

If you submitted a somewhat similar application in the past and did not receive an award but are submitting the current application as a new application, you should indicate on the application form (Item 8) that your FY 2019 application is a new application. In Appendix B, you should provide a rationale explaining why your FY 2019 application should be considered a new application rather than a revision. If you do not provide such an explanation, then the Institute may send the reviews of the prior unfunded application to this year's reviewers along with the current application.

You may submit applications to more than one of the Institute's FY 2019 grant programs and to multiple topics within the Special Education Research Grants program. In addition, within a particular grant program or topic, you may submit multiple applications. However, you may submit a given application

only once for the FY 2019 grant competitions (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). If you submit the same or similar applications, the Institute will determine whether and which applications will be accepted for review and/or will be eligible for funding.

3. Application Processing

Applications must be submitted electronically and received no later than 4:30:00 p.m., Eastern Time on August 23, 2018 through the Internet using the software provided on the Grants.gov website: http://www.grants.gov/. You must follow the application procedures and submission requirements described in Part V: Preparing Your Application and Part VI: Submitting Your Application and the instructions in the User Guides provided by Grants.gov (https://www.grants.gov/help/html/help/GetStarted/Get_Started.htm).

After receiving the applications, Institute staff will review each application for compliance and responsiveness to this Request for Applications. Applications that do not address specific requirements of this request will not be considered further.

Once you formally submit an application, Institute staff will not comment on its status until the award decisions are announced (no later than July 1, 2019) except with respect to issues of compliance and responsiveness. This communication will come through the Applicant Notification System (https://iesreview.ed.gov/).

Once an application has been submitted and the application deadline has passed, you may not submit additional materials for inclusion with your application.

4. Scientific Peer Review Process

The Institute will forward all applications that are compliant and responsive to this Request for Applications to be evaluated for scientific and technical merit. Scientific 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 http://ies.ed.gov/director/sro/peer_review/reviewers.asp. 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 Institute 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.

5. 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 described in [Part III: Goal Descriptions and Requirements](#) and in the section describing the relevant research grant topic within [Part II: Topic Descriptions and Requirements](#).

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 and address the recommendations 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? Does the applicant have adequate capacity to disseminate results to a range of audiences in ways that are useful to them and reflective of the type of research done (e.g., the research goal)?

6. Award Decisions

The following will be considered in making award decisions for responsive and compliant applications:

- Scientific merit as determined by scientific peer review;
- Performance and use of funds under a previous federal award;
- Contribution to the overall program of research described in this Request for Applications,
- Alignment of project budget and duration with requirements specified in the Request for Applications (i.e., the proposed research both requires and can be carried out with the proposed budget and project duration after making any necessary adjustments to meet the maximum award and maximum duration requirements); and
- Availability of funds.

PART V: PREPARING YOUR APPLICATION

A. OVERVIEW

The application contents – individual forms and their PDF attachments – represent the body of an application to the Institute. **All applications for Institute funding must be self-contained**. As an example, reviewers are under no obligation to view an Internet website if you include the site address (URL) in the application. In addition, **you may not submit additional materials or information directly to the Institute after the application package is submitted**.

B. GRANT APPLICATION PACKAGE

The Application Package for this competition (84-324A2019) provides all of the forms that you must complete and submit. The application form approved for use in the competition specified in this Request for Applications is the government-wide SF-424 Research and Related (R&R) Form (OMB Number 4040-0001).[30]

1. Date Application Package is Available on Grants.gov

The Application Package will be available on http://www.grants.gov/ by June 21, 2018.

2. How to Download the Correct Application Package

To find the correct downloadable Application Package, you must first search by the CFDA number for this research competition without the alpha suffix. To submit an application to the Special Education Research Grants program, you must search on: CFDA 84.324.

The Grants.gov search on CFDA 84.324 will yield more than one Application Package. For the Special Education Research Grants program, you must download the Application Package marked:

- Special Education Research CFDA 84.324A

You must download the Application Package that is designated for this grant competition. If you use a different Application Package, even if it is for another Institute competition, the application will be submitted to the wrong competition. Applications submitted using the incorrect application package run the risk of not being reviewed according to the requirements and recommendations for the Special Education Research Grants competition.

See Part VI: Submitting Your Application, for a complete description of the forms that make up the application package and directions for filling out these forms.

C. GENERAL FORMATTING

For a complete application, you must submit the following as individual attachments to the R&R forms that are contained in the application package for this competition in Adobe Portable Document Format (PDF):

- Project Summary/Abstract;

- Project Narrative, Appendix A: Dissemination Plan; and if applicable, Appendix B: Response to Reviewers; Appendix C: Supplemental Charts, Tables, and Figures; Appendix D: Examples of

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[30] According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. The valid OMB control numbers for this information collection are 4040-0001 and 4040-0010. The time required to complete this information collection is estimated to average 40 hours per response, including the time to review instructions, search existing data resources, gather the data needed, and complete and review the information collection. If you have any comments concerning the accuracy of the time estimate(s) or suggestions for improving this family of forms, please write to: U.S. Department of Education, Washington, D.C. 20202-4537.

Intervention or Assessment Materials; Appendix E: Letters of Agreement; and Appendix F: Data Management Plan (all together as one PDF file);

- Bibliography and References Cited;

- Research on Human Subjects Narrative (i.e., Exempt or Non-Exempt Research Narrative);

- A Biographical Sketch for each senior/key person;

- A Narrative Budget Justification for the total project budget; and

- Subaward Budget(s) that has (have) been extracted from the R&R Subaward Budget (Fed/Non-Fed) Attachment(s) Form, if applicable.

Information about formatting all of these documents except the subaward budget attachment (see Part VI.E.6) is provided below.

1. Page and Margin Specifications

For all Institute research grant applications, a "page" is 8.5 in. x 11 in., on one side only, with 1 inch margins at the top, bottom, and both sides.

2. Page Numbering

Add page numbers using the header or footer function, and place them at the bottom or upper right corner for ease of reading.

3. Spacing

We recommend that you use single spacing.

4. Type Size (Font Size)

Small type size makes it difficult for reviewers to read the application. To ensure legibility, we recommend the following:

- The height of the letters is not smaller than a type size of 12-point.

- Type density, including characters and spaces, is no more than 15 characters per inch (cpi). For proportional spacing, the average for any representative section of text does not exceed 15 cpi.

- Type size yields no more than 6 lines of type within a vertical inch.

As a practical matter, if you use a 12-point Times New Roman font without compressing, kerning, condensing, or other alterations, the application will typically meet these recommendations. When converting documents into PDF files, you should check that the resulting type size is consistent with the original document.

5. Graphs, Diagrams, and Tables

We recommend that you use black and white in graphs, diagrams, tables, and charts. If color is used, you should ensure that the material reproduces well when printed or photocopied in black and white. Text in figures, charts, and tables, including legends, should be readily legible.

D. PDF ATTACHMENTS

The information you include in these PDF attachments provides the majority of the information on which reviewers will evaluate the application.

1. Project Summary/Abstract

a) Submission
You must submit the project summary/abstract as a separate PDF attachment at Item 7 of the Other Project Information form (see Part VI.F.4: Research & Related Other Project Information).

b) Recommended page length
We recommend that the project summary/abstract be no more than one page.

c) Content
The project summary/abstract should include the following:

- **Title** of the project.

- The **topic and goal** to which you are applying (e.g., Special Education Policy, Finance, and Systems; Development and Innovation goal).

- **Purpose**: A brief description of the purpose of the project (e.g., to develop and document the feasibility of an intervention) and its significance for improving student education outcomes.

- **Setting**: A brief description of the location (e.g., state or states) where the research will take place and other important characteristics of the locale (e.g., urban/suburban/rural).

- **Population/Sample**: A brief description of the sample that will be involved in the study (e.g., number of participants), its composition (e.g., age or grade level, disability, race/ethnicity, SES) and the population the sample is intended to represent.

- **Intervention/Assessment**: If applicable, a brief description of the intervention or assessment to be developed, evaluated, or validated.

- **Control Condition**: 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).

- **Research Design and Methods**: Briefly describe the major features of the design and methodology to be used (e.g., randomized controlled trial, quasi-experimental design, mixed method design; iterative design process).

- **Key Measures:** A brief description of key measures and outcomes.

- **Data Analytic Strategy**: A brief description of the data analytic strategy that will be used to answer research questions.

Please see https://ies.ed.gov/funding/grantsearch/ for examples of the content to be included in your project summary/abstract.

2. Project Narrative

a) Submission
You must submit the project narrative as a separate PDF attachment at Item 8 of the Other Project Information form (see Part VI.F.4: Research & Related Other Project Information).

b) Recommended page length
We recommend that the project narrative be no more than 25 pages. To help reviewers locate information and conduct the highest quality review, write a concise and easy to read narrative, with pages numbered consecutively using the header or footer function to place numbers at the top or bottom right-hand corner.

c) Citing references in text
We recommend you 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 this Request for Applications: (1) Significance, (2) Research Plan, (3) Personnel, and (4) Resources. Information to be included in each of these sections is detailed in <u>Part III: Goal Descriptions and Requirements</u>. **The information you include in each of these four sections will provide the majority of the information on which reviewers will evaluate the application**.

3. Appendix A: Dissemination Plan (Required)

a) Submission
All applications **must** include Appendix A after the project narrative as part of the same PDF attachment at Item 8 of the Other Project Information form (see <u>Part VI.F.4: Research & Related Other Project Information</u>).

b) Recommended page length
We recommend that Appendix A be no more than two pages.

c) Content
In Appendix A, describe your required plan to disseminate the findings from the proposed project. In your dissemination plan, you should

- Identify the audiences that you expect will be most likely to benefit from your research (e.g., federal policymakers and program administrators, state policymakers and program administrators, state and local school system administrators, school administrators, teachers and other school staff, parents, students, other education researchers).

- Discuss the different ways in which you intend to reach these audiences through the major publications, presentations, and products you expect to produce.
  - IES-funded researchers are expected to publish and present in venues designed for policymakers and practitioners in a manner and style useful and usable to this audience. For example:
    - ➤ Report findings to the education agencies and schools that provided the project with data and data-collection opportunities.
    - ➤ Give presentations and workshops at meetings of professional associations of teachers and leaders.
    - ➤ Publish in practitioner journals.
    - ➤ Engage in activities with relevant IES-funded Research and Development (R&D) Centers, Research Networks, or Regional Educational Laboratories (RELs)
      - ▪ R&D Centers: https://ies.ed.gov/ncser/RandD/
      - ▪ Research Network: https://ies.ed.gov/ncer/research/researchNetworks.asp
      - ▪ RELs: https://ies.ed.gov/ncee/edlabs/
  - IES-funded researchers who create products for use in research and practice as a result of their project (such as curricula, professional development programs, measures and assessments, guides and toolkits) are expected to make these products available for research purposes or (after evaluation or validation) for general use. Consistent with existing

guidelines, IES encourages researchers to consider how these products could be brought to market to increase their dissemination and use.

  o IES-funded researchers are expected to publish their findings in scientific, peer-reviewed journals and present them at conferences attended by other researchers.

- Your dissemination plan should reflect the purpose of your project's research goal.

  o [Exploration](#) projects are expected to identify potentially important associations between malleable factors and student outcomes. Findings from Exploration projects are most useful in pointing out potentially fruitful areas for further attention from researchers, policymakers and practitioners rather than providing strong evidence for adopting specific interventions.

  o [Development and Innovation](#) projects are expected to develop new or revise existing interventions and pilot them to provide evidence of promise for improving student outcomes. For example, if the results of your pilot study indicate the intervention is promising, dissemination efforts should focus on letting others know about the availability of the new intervention for more rigorous evaluation and further adaptation. Dissemination efforts from these projects could also provide useful information on the design process, how intervention development can be accomplished in partnership with practitioners, and the types of new practices that are feasible or not feasible for use by practitioners. Your dissemination plan should also include information on the cost of the intervention.

  o [Efficacy and Follow-Up](#) projects and [Replication: Efficacy and Effectiveness](#) projects are intended to evaluate the impact of an intervention on student outcomes. The Institute considers all types of findings from these projects to be potentially useful to researchers, policymakers, and practitioners and expects that these findings will be disseminated in order to contribute to the full body of evidence on the intervention and will form the basis for recommendations.

    ➢ Findings of a beneficial impact on student outcomes could support the wider use of the intervention and the further adaptation of the intervention to conditions that are different.

    ➢ Findings of no impacts on student outcomes (with or without impacts on more intermediate outcomes such as a change in teacher instruction) are important for decisions regarding the ongoing use and wider dissemination of the intervention, further revision of the intervention and its implementation, and revision of the theory of change underlying the intervention.

  Your dissemination plan should also include information on the intervention's cost and cost-effectiveness.

  o [Measurement](#) projects are intended to support (1) the development of new [assessments](#) or refinement of existing assessments or (2) the validation of existing assessments. Dissemination of findings should clearly provide the psychometric properties of the assessment and identify the specific uses and populations for which it was validated. Should a project fail to validate an assessment for a specific use and population, these findings are important to disseminate in order to support decision making regarding their current use and further development. If you expect the assessment to be purchased by schools or other users, your dissemination plan should include information on its cost.

The Dissemination Plan is the only information that should be included in Appendix A.

4. Appendix B: Response to Reviewers (Required for Resubmissions)

a) Submission
If your application is a resubmission, you **must** include Appendix B. If your application is one that you consider to be new but that is similar to a previous application, you should include Appendix B. Include

Appendix B after Appendix A (required), which follows the project narrative as part of the same PDF attachment at Item 8 of the Other Project Information form (see Part VI.F.4: Research & Related Other Project Information).

b) Recommended page length
We recommend that Appendix B be no more than three pages.

c) Content
Use Appendix B to describe the required response to reviewers, which details how the revised application 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 should use Appendix B to provide a rationale explaining why the current application should be considered a "new" application rather than a "resubmitted" application.

This response to the reviewers is the only information that should be included in Appendix B.

5. Appendix C: Supplemental Charts, Tables, and Figures (Optional)

a) Submission
If you choose to have an Appendix C, you must include it following Appendix B (if included) and Appendix A (required), which follow the project narrative, and submit it as part of the same PDF attachment at Item 8 of the Other Project Information form (see Part VI.F.4: Research & Related Other Project Information).

b) Recommended page length
We recommend that Appendix C be no more than 15 pages.

c) Content
You may include figures, charts, tables (e.g., a timeline for your research project, a diagram of the management structure of your project), or measures (e.g., individual items, tests, surveys, observation and interview protocols) used to collect data for your project. These are the only materials that should be included in Appendix C.

6. Appendix D: Examples of Intervention or Assessment Materials (Optional)

a) Submission
If you choose to have an Appendix D, you must include it following Appendix C (if included; if no Appendix C is included, then Appendix D should follow Appendix B, if included, and Appendix A, required, which follow the project narrative), and submit it as part of the same PDF attachment at Item 8 of the Other Project Information form (see Part VI.F.4: Research & Related Other Project Information).

b) Recommended page length
We recommend that Appendix D be no more than 10 pages.

c) Content
In Appendix D, if you are proposing to explore, develop, evaluate, or validate an intervention or assessment you may include examples of curriculum materials, computer screen shots, assessment items, or other materials used in the intervention or assessment to be explored, developed, evaluated, or validated. These are the only materials that should be included in Appendix D.

7. Appendix E: Letters of Agreement (Optional)

a) Submission
If you choose to have an Appendix E, you must include it following the other Appendices included at the end of the project narrative and submit it as part of the same PDF attachment at Item 8 of the Other Project Information form (see Part VI.F.4: Research & Related Other Project Information).

b) Recommended page length
We do not recommend a page length for Appendix E.

c) Content
Include in Appendix E the Letters of Agreement from partners (e.g., schools and districts), data sources (e.g., state agencies holding administrative data), and consultants. Ensure that the letters reproduce well so that reviewers can easily read them. Do not reduce the size of the letters. See Part VI.E.4 Attaching Files for guidance regarding the size of file attachments.

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.

These are the only materials that should be included in Appendix E.

8. Appendix F: Data Management Plan (Required for Applications under Goals Three and Four)

a) Submission
If you are applying under Efficacy and Follow-up (Goal Three) or Replication: Efficacy and Effectiveness (Goal Four), you **must** include Appendix F following the other Appendices included at the end of the project narrative, and submit it as part of the same PDF attachment at Item 8 of the Other Project Information form (see Part VI.F.4: Research & Related Other Project Information). If you are applying under any other research goal, do not include Appendix F.

b) Recommended page length
We recommend that Appendix F be no more than five pages.

c) Content
Include in Appendix F your Data Management Plan (DMP). The content of the DMP is discussed under (3) Data Management Plan in Efficacy and Follow-up (Goal Three) and Replication: Efficacy and Effectiveness. These are the only materials that should be included in Appendix F.

9. Bibliography and References Cited

a) Submission
You must submit this section as a separate PDF attachment at Item 9 of the Other Project Information form (see Part VI.F.4: Research & Related Other Project Information).

b) Recommended page length
We do not recommend a page length for the bibliography and references cited.

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), page numbers, and year of publication for literature cited in the project narrative.

10. Research on Human Subjects Narrative

a) Submission

The human subjects narrative must be submitted as a PDF attachment at Item 12 of the Other Project Information form (see Part VI.F.4: Research & Related Other Project Information).

b) Recommended page length

We do not recommend a page length for the human subjects narrative.

c) Content

The human subjects narrative should address the information specified by the U.S. Department of Education's Regulations for the Protection of Human Subjects (see http://www2.ed.gov/about/offices/list/ocfo/humansub.html for additional information).

Exempt Research on Human Subjects Narrative

Provide an "exempt" narrative if you checked "yes" on Item 1 of the Research & Related Other Project Information form (see Part VI.F.4: Research & Related Other Project Information). The narrative must contain sufficient information about the involvement of human subjects in the proposed research to allow a determination by the Department that the designated exemption(s) are appropriate. The six categories of research that qualify for exemption from coverage by the regulations are described on the Department's website http://www2.ed.gov/policy/fund/guid/humansub/overview.html.

Non-Exempt Research on Human Subjects Narrative

If some or all of the planned research activities are covered by (not exempt from) the Human Subjects Regulations and you checked "no" on Item 1 of the Research & Related Other Project Information form (see Part VI.F.4: Research & Related Other Project Information), provide a "nonexempt research" narrative. The nonexempt narrative should describe the following: the characteristics of the subject population; the data to be collected from human subjects; recruitment and consent procedures; any potential risks; planned procedures for protecting against or minimizing potential risks; the importance of the knowledge to be gained relative to potential risks; and any other sites where human subjects are involved.

Note that the U.S. Department of Education does not require certification of Institutional Review Board approval at the time you submit your application. However, if an application that involves non-exempt human subjects research is recommended/selected for funding, the designated U.S. Department of Education official will request that you obtain and send the certification to the Department within 30 days after the formal request.

11. Biographical Sketches for Senior/Key Personnel

a) Submission

Each biographical sketch will be submitted as a separate PDF attachment and attached to the Research & Related Senior/Key Person Profile (Expanded) form (see Part VI.F.2 Research & Related Senior/Key Person Profile (Expanded)). The Institute encourages you to use the IES Biosketch template available through SciENcv or you may develop your own biosketch format.

b) Recommended page length

We recommend that each biographical sketch be no more than five pages, which includes Current and Pending Support.

c) Content

Provide a biographical sketch for the Principal Investigator, each co-Principal Investigator, and other key personnel. Each sketch should include information sufficient to demonstrate that key personnel possess training and expertise commensurate with their specified duties on the proposed project (e.g., publications, grants, and relevant research experience). If you'd like, you may also include biographical sketches for consultants (the form will allow for up to 40 biographical sketches in total).

Provide a list of current and pending grants for the Principal Investigator, each co-Principal Investigator, and other key personnel, along with the proportion of his/her time, expressed as percent effort over a 12-month calendar year, allocated to each project. Include the proposed special education research grant as one of the pending grants in this list. If the total 12-month calendar year percent effort across all current and pending projects exceeds 100 percent, you must explain how time will be allocated if all pending applications are successful in the Narrative Budget Justification. If you use SciENcv, the information on current and pending support will be entered into the IES biosketch template. If you use your own format, you will need to provide this information in a separate table.

12. Narrative Budget Justification

a) Submission

The Narrative Budget Justification must be submitted as a PDF attachment at Section K of the first project period of the Research & Related Budget (SF 424) Sections A & B; C, D, & E; and F-K form for the Project (see Part VI.F.5 Research & Related Budget (Total Federal + Non-Federal) - Sections A & B; C, D, & E; and F-K). For grant submissions with a subaward(s), a separate narrative budget justification for each subaward must be submitted and attached at Section K of the Research & Related Budget (SF 424) for the specific Subaward/Consortium that has been extracted and attached using the R&R Subaward Budget (Fed/Non-Fed) Attachment(s) Form (see Part VI.F.6).

b) Recommended page length

We do not recommend a page length for the Narrative Budget Justification.

c) Content

A Narrative Budget Justification must be submitted for the project budget, and a separate Narrative Budget Justification must be submitted for any subaward budgets included in the application. Each Narrative Budget Justification should provide sufficient detail to allow reviewers to judge whether reasonable costs have been attributed to the project and its subawards, if applicable. The budget justification should correspond to the itemized breakdown of project costs that is provided in the corresponding Research & Related Budget (SF 424) Sections A & B; C, D, & E; and F-K form for each year of the project. The narrative should include the time commitments for key personnel expressed as annual percent effort (i.e., calculated over a 12-month period) and brief descriptions of the responsibilities of key personnel. For consultants, the narrative should include the number of days of anticipated consultation, the expected rate of compensation, travel, per diem, and other related costs. A justification for equipment purchases, supplies, travel (including information regarding number of days of travel, mode of transportation, per diem rates, number of travelers, etc.), and other related project costs should also be provided in the budget narrative for each project year outlined in the Research & Related Budget (SF 424).

d) Indirect Cost Rate

You must use your institution's federally negotiated indirect cost rate (see Part IV.A.3 Special Considerations for Budget Expenses). When calculating your indirect costs on expenses for research conducted in field settings, you should apply your institution's federally negotiated off-campus indirect

cost rate. If your institution does not have a federally negotiated indirect cost rate, you should consult a member of the Indirect Cost Group (ICG) in the U.S. Department of Education's Office of the Chief Financial Officer (http://www2.ed.gov/about/offices/list/ocfo/fipao/icgreps.html) to help you estimate the indirect cost rate to put in your application.

PART VI: SUBMITTING YOUR APPLICATION

This part of the RFA describes important submission procedures you need to be aware of to ensure your application is received on time (no later than 4:30:00pm Eastern Time on August 23, 2018) and accepted by the Institute.

Any questions that you may have about submitting your application through Grants.gov should be addressed to Grants.gov Applicant Support (support@grants.gov, http://www.grants.gov/web/grants/support.html, 1-800-518-4726). You can also access the Grants.gov Self-Service Knowledge Base web portal at https://grants-portal.psc.gov/Welcome.aspx?pt=Grants for further guidance and troubleshooting tips.

A. MANDATORY ELECTRONIC SUBMISSION OF APPLICATIONS AND DEADLINE

Applications must be submitted electronically through the Grants.gov web site, http://www.grants.gov/, and must be received (fully uploaded and processed by Grants.gov) no later than 4:30:00 pm Eastern Time on August 23, 2018. **Applications received by Grants.gov after the 4:30:00 pm Eastern Time application deadline will be considered late and will not be sent forward for scientific peer review**.

Submission through Grants.gov is required unless you qualify for one of the exceptions to the electronic submission requirement *and* submit, no later than 2 weeks before the application deadline date, a written statement to the Department that you qualify for one of these exceptions. A description of the Allowable Exceptions to Electronic Submissions is provided at the end of this document.

Please consider submitting your application ahead of the deadline date (the Institute recommends 3 to 4 days in advance of the closing date and time) to avoid running the risk of a late submission that will not be reviewed. **The Institute does not accept late applications**.

B. REGISTER ON GRANTS.GOV

To submit an application to the Institute via Grants.gov, your organization must have four things:

- A Data Universal Numbering System (DUNS) Number,
- An active System for Award Management (SAM) registration,
- An active Grants.gov account, and
- A workspace for your application within Grants.gov.

1. Register Early

Grants.gov registration involves many steps including obtaining a DUNS number if you do not already have one. The DUNS number is necessary to complete registration on SAM (www.sam.gov), which itself may take approximately one week to complete. Note: SAM registration can take several weeks to complete, depending upon the completeness and accuracy of the data entered into the SAM database by the applicant organization. During SAM registration the eBIZ POC role for the organization is assigned. The eBIZ POC is the individual within the organization who oversees all activities within Grants.gov and gives permissions to Authorized Organization Representatives (AORs). AORs are allowed to submit grant applications on behalf of their organization. It is the eBIZ POC's responsibility to renew the organization's SAM registration annually.

There have been some changes to the SAM registration process. Beginning on April 27, 2018, new entities, or entities renewing or updating their registration will be required to submit an original, signed notarized letter confirming the authorized Entity Administrator associated with the DUNS number before the registration is activated. Visit this FAQ page for more information.

You may begin working on your application while completing the registration process, but you cannot submit an application until all of the Registration steps are complete. Please note that once your SAM registration is active, it will take 24 to 48 hours for the information to be available in Grants.gov, and before you can submit an application through Grants.gov.

For additional assistance with registering your DUNS number in SAM or updating your existing SAM account, the Department of Education has prepared a SAM.gov Tip Sheet which you can find at: http://www2.ed.gov/fund/grant/apply/sam-faqs.html.

2. Create a Grants.gov account

If your organization is new to federal grants or Grants.gov, review the Organization Registration page https://www.grants.gov/web/grants/applicants/organization-registration.html. If you already have a Grants.gov account, you do not need to register another account.

1. Click the Register link https://www.grants.gov/web/grants/register.html in the top-right corner of the Grants.gov banner.

2. Click the **Get Registered Now** button on the Register page.

3. Complete the **Contact Information** and **Account Details** sections. All fields with a red asterisk (*) are required.

   - Email Address - When entering an email address, please keep in mind that all correspondence with Grants.gov will be sent to that email address.

4. Select whether to subscribe or unsubscribe from Grants.gov Communications. The **Alerts** are important messages about time-sensitive or major system changes. The **Newsletter** features training, system enhancement updates, and other resources to help the federal grants community.

5. Decide if you would like to add a profile to your Grants.gov account or click the **Continue** button to log in. You need to add a profile https://www.grants.gov/web/grants/applicants/registration/add-profile.html to submit an application.

3. Add a Profile to a Grants.gov Account

A profile in Grants.gov corresponds to a single applicant organization the user represents (i.e., an applicant) or an individual applicant. If you work for or consult with multiple organizations and have a profile for each, you may log in to one Grants.gov account to access all of your grant applications. To add an organizational profile to your Grants.gov account, enter the DUNS Number for the organization in the DUNS field while adding a profile. For more detailed instructions about creating a profile on Grants.gov see https://www.grants.gov/web/grants/applicants/registration/add-profile.html.

- After you register with Grants.gov and create an Organization Applicant Profile, the organization applicant's request for Grants.gov roles and access is sent to the EBiz POC. Each organization has one eBIZ POC that is assigned in SAM. Authorized Organization Representatives (AORs) are allowed to submit grant applications on behalf of their organization. The eBIZ POC will then log into Grants.gov and authorize the appropriate roles, including the AOR. The application can be submitted online by any person assigned the AOR role.

- When applications are submitted through Grants.gov, the name of the organization applicant with the AOR role that submitted the application is inserted into the signature line of the application, serving as the electronic signature. The eBIZ POC **must** authorize people who are able to make legally binding commitments on behalf of the organization as a user with the AOR role; **this step is often missed and it is crucial for valid and timely submissions.**

C. WORKSPACE (NEW)

To submit your application, you must create or use an existing workspace within Grants.gov. Workspace is a shared, online environment where multiple people may simultaneously access and edit different forms within the application https://www.grants.gov/web/grants/applicants/workspace-overview.html. Creating a workspace for your application allows you to complete it online and route it through your organization for review before submitting. Participants who have assigned roles in the workspace can complete all the required forms online (or by downloading PDF versions and working offline) and check for errors before submission.

The Workspace progress bar will display the state of your application progess as you apply. Click the blue question mark icon near the upper-right corner of each page for additional help if needed. Once the application is complete and ready to be submitted, click the Sign and Submit button on the Manage Workspace page, under the Forms tab.

- Adobe Reader: If you do not want to complete the forms online, you can download individual PDF forms in Workspace and complete them offline. The individual PDF forms can be downloaded and saved to your local device storage, network drive(s), or external drives, then accessed through Adobe Reader. See the Adobe Software Compatibility page on Grants.gov to download the appropriate version if needed https://www.grants.gov/web/grants/applicants/adobe-software-compatibility.html.

For additional training resources on Workspace, including video tutorials, please see https://www.grants.gov/web/grants/applicants/applicant-training.html. The Institute also offers webinars on the application submission process http://ies.ed.gov/funding/webinars/index.asp.

D. SUBMISSION AND SUBMISSION VERIFICATION

1. Submit Early

The Institute strongly recommends that you do not wait until the deadline date to submit an application. Grants.gov will put a date/time stamp on the application and then process it after it is fully uploaded. **The time it takes to upload an application will vary depending on a number of factors including the size of the application and the speed of your Internet connection.** If Grants.gov rejects your application due to errors in the application package, you will need to resubmit successfully before 4:30:00 p.m. Eastern Time on the deadline date. As an example, if you begin the submission process at 4:00:00 p.m. Eastern Time on the deadline date, and Grants.gov rejects the application at 4:15:00 p.m. Easter Time, there may not be enough time for you to locate the error that caused the submission to be rejected, correct it, and then attempt to submit the application again before the 4:30:00 p.m. Eastern Time deadline.

Grants.gov recommends that you begin the submission process 24 to 48 hours before the deadline date and time to ensure a successful, on-time submission.

Note: To submit successfully, **you must provide the DUNS number on your application that was used when you were registered as an Authorized Organization Representative (AOR) on Grants.gov**. This DUNS number should be the same number used when your organization registered with the SAM. If you do not enter the same DUNS number on your application as the DUNS you registered with, Grants.gov will reject your application.

2. Verify Submission is OK

The Institute urges you to verify that Grants.gov and the Institute have received the application on time and that it was validated successfully. To see the date and time that your application was received by Grants.gov, you need to log on to Grants.gov and click on the "Track My Application" link http://www.grants.gov/web/grants/applicants/track-my-application.html. For a successful submission, the date/time received should be no later than 4:30:00 p.m. Eastern Time on the deadline date, AND the application status should be: (1) Validated (i.e., no errors in submission), (2) Received by Agency (i.e.,

Grants.gov has transmitted the submission to the U.S. Department of Education), or (3) Agency Tracking Number Assigned (the U.S. Department of Education has assigned a unique PR/Award Number to the application).

Note: If the date/time received is later than 4:30:00 p.m. Eastern Time on the deadline date, the application is late. If the application has a status of "Received", it is still awaiting validation by Grants.gov. Once validation is complete, the status will change either to "Validated" or "Rejected with Errors." If the status is "Rejected with Errors," the application has not been received successfully. Grants.gov provides information on reasons why applications may be rejected in its Frequently Asked Questions (FAQ) page.

- Grants.gov FAQ
https://www.grants.gov/web/grants/applicants/applicant-faqs.html

- Grants.gov Adobe Reader FAQs
https://www.grants.gov/web/grants/applicants/adobe-software-compatibility.html

You will receive four emails regarding the status of your submission; the first three will come from Grants.gov and the fourth will come from the U.S. Department of Education. Within 2 days of submitting a grant application to Grants.gov, you will receive three emails from Grants.gov:

- The first email message will confirm receipt of the application by the Grants.gov system and will provide you with an application tracking number beginning with the word "GRANT", for example GRANT00234567. You can use this number to track your application on Grants.gov using the "Track My Application" link http://www.grants.gov/web/grants/applicants/track-my-application.html before it is transmitted to the U.S. Department of Education.

- The second email message will indicate that the application EITHER has been successfully validated by the Grants.gov system prior to transmission to the U.S. Department of Education OR has been rejected due to errors, in which case it will not be transmitted to the Department.

- The third email message will indicate that the U.S. Department of Education has confirmed retrieval of the application from Grants.gov once it has been validated.

If the second email message indicates that the application, as identified by its unique application tracking number, is valid and the time of receipt was no later than 4:30:00 p.m. Eastern Time, then the application submission is successful and on-time.

Note: You should not rely solely on email to confirm whether an application has been received on-time and validated successfully. The Institute urges you to use the "Track My Application" link on Grants.gov to verify on-time, valid submissions in addition to the confirmation emails http://www.grants.gov/web/grants/applicants/track-my-application.html.

Once Grants.gov validates the application and transmits it to the U.S. Department of Education, you will receive an email from the U.S. Department of Education.

- This fourth email message will indicate that the application has been assigned a PR/Award number unique to the application beginning with the letter R, followed by the section of the CFDA number unique to that research competition (e.g., 324A), the fiscal year for the submission (e.g., 19 for fiscal year 2019), and finally four digits unique to the application (e.g., R324A19XXXX). If the application was received after the closing date/time, this email will also indicate that the application is late and will not be given further consideration.

Note: The Institute strongly recommends that you begin the submission process at least 3 to 4 days in advance of the closing date to allow for a successful and timely submission.

3. Late Applications

If your application is submitted after 4:30:00 p.m. Eastern Time on the application deadline date your application will not be accepted and will not be reviewed. **The Institute does not accept late applications.**

Late applications are often the result of one or more common submission problems that could not be resolved because there was not enough time to do so before the application deadline. Some of the reasons Grants.gov may reject an application can be found on the Grants.gov site http://www.grants.gov/web/grants/applicants/encountering-error-messages.html.

For more detailed information on troubleshooting Adobe errors, you can review the Adobe Reader Software Tip Sheet at http://www.grants.gov/web/grants/applicants/adobe-software-compatibility.html.

If after consulting these resources you still experience problems, contact Grants.gov Applicant Support (1-800-518-4726 or support@grants.gov) or access the Grants.gov Self-Service Knowledge Base web portal https://grants-portal.psc.gov/Welcome.aspx?pt=Grants.

If the Grants.gov Support Desk determines that a technical problem occurred with the Grants.gov system, and determines that the problem affected your ability to submit the application by the submission deadline, you may petition the Institute to review your application (email the relevant program officer with the Grants.gov case number and related information). However, if Grants.gov determines that the problem you experienced is one of those identified by Grants.gov as common application errors, do not petition the Institute to have your case reviewed because these common submission problems are not grounds for petition. **The Institute will not accept an application that was late due to failure to follow the submission guidelines provided by Grants.gov and summarized in this RFA**.

E. TIPS FOR WORKING WITH GRANTS.GOV

Please go to http://www.grants.gov/web/grants/support.html for help with Grants.gov. For additional tips related to submitting grant applications, refer to the Grants.gov Applicant FAQs http://www.grants.gov/web/grants/applicants/applicant-faqs.html as well as additional information on Workspace at https://www.grants.gov/web/grants/applicants/applicant-faqs.html#workspace.

1. Internet Connections

The time required to upload and submit your application will vary depending upon a number of factors, including the type of Internet connection you are using (e.g., high-speed connection versus dial up). Plan your submission accordingly.

2. Browser Support

The latest versions of Microsoft Internet Explorer (IE), Mozilla Firefox, Google Chrome, and Apple Safari are supported for use with Grants.gov. However, these web browsers undergo frequent changes and updates, so we recommend you have the latest version when using Grants.gov. Legacy versions of these web browsers may be functional, but you may experience issues.

For additional information or updates, please see the Grants.gov Browser information in the Applicant FAQs http://www.grants.gov/web/grants/applicants/applicant-faqs.html#browser

3. Software Requirements

Grants.gov recommends using Adobe Acrobat Reader for Windows or MAC OS. Grants.gov has an Adobe Software Compatibility page https://www.grants.gov/web/grants/applicants/adobe-software-compatibility.html where you can download the appropriate version of Adobe if needed.

4. Attaching Files

You must attach **read-only, flattened .PDF files** to the forms in the application package (see Part V.D PDF Attachments).

- PDF files are the only approved file type accepted by the Department of Education as detailed in the Federal Register application notice. Applicants must submit individual .PDF files only when attaching files to their application. Specifically, the Department will not accept any attachments that contain files within a file, such as PDF Portfolio files, or an interactive or fillable .PDF file. Any attachments uploaded that are not .PDF files or are password protected files will not be read.

- Grants.gov cannot process an application that includes two or more files that have the same name within a grant submission. Therefore, each file uploaded to your application package should have a unique file name.

- When attaching files, applicants should follow the guidelines established by Grants.gov on the size and content of file names. Uploaded file names must be fewer than 50 characters, and, in general, applicants should not use any special characters. However, Grants.gov does allow for the following UTF-8 characters when naming your attachments: A-Z, a-z, 0-9, underscore, hyphen, space, period, parenthesis, curly braces, square brackets, ampersand, tilde, exclamation point, comma, semi colon, apostrophe, at sign, number sign, dollar sign, percent sign, plus sign, and equal sign. Applications submitted that do not comply with the Grants.gov guidelines will be rejected at Grants.gov and not forwarded to the Department.

- Applicants should limit the size of their file attachments. Documents submitted that contain graphics and/or scanned material often greatly increase the size of the file attachments and can result in difficulties opening the files. For reference, the average discretionary grant application package with all attachments is less than 5 MB. Therefore, you may want to check the total size of your package before submission.

F. REQUIRED RESEARCH & RELATED (R&R) FORMS AND OTHER FORMS

You must complete and submit the R&R forms described below. All of these forms are provided in the application package for this competition (84-324A2019). Please note that fields marked by an asterisk and highlighted in yellow and outlined in red on these forms are required fields and must be completed to ensure a successful submission.

Note: Although not required fields, Items 4a (Federal Identifier) and 4b (Agency Routing Number) on the Application for Federal Assistance SF 424 (R&R) form provide critical information to the Institute and should be filled out for an application to this research grant competition.

1. Application for Federal Assistance SF 424 (R&R)

This form asks for general information about the applicant, including but not limited to the following: contact information; an Employer Identification Number (EIN); a DUNS number; a descriptive title for the project; an indication of the project topic and the appropriate goal; Principal Investigator contact information; start and end dates for the project; congressional district; total estimated project funding; and Authorized Organization Representative contact information.

Because information on this form populates selected fields on some of the other forms described below, you should complete this form first. This form allows you to attach a cover letter; however, the Institute does not require a cover letter so you should not attach one here.

Provide the requested information using the dropdown menus when available. Guidance for completing selected items follows.

- Item 1

  Type of Submission. Select either "Application" or "Changed/Corrected Application." "Changed/Corrected Application" should only be selected in the event that you need to submit an updated version of an already submitted application (e.g., you realized you left something out of the first application submitted). The Institute does not require Pre-applications for its grant competitions.

- Item 2

  Date Submitted. Enter the date the application is submitted to the Institute.

  Applicant Identifier. Leave this blank.

- Item 3

  Date Received by State and State Application Identifier. Leave these items blank.

- Item 4

  Note: This item provides important information that is used by the Institute to screen applications for responsiveness to the competition requirements and for assignment to the appropriate scientific peer review panel. **It is critical that you complete this information completely and accurately or the application may be rejected as nonresponsive or assigned inaccurately for scientific review of merit**.

  - Item 4a: Federal Identifier. **Enter information in this field if this is a Resubmission**. If this application is a revision of an application that was submitted to an Institute grant competition in a prior fiscal year (e.g., FY 2018) that received reviewer feedback, then this application is considered a "Resubmission" (see Item 8 Type of Application). You should **enter the PR/Award number that was assigned to the prior submission (e.g., R324A18XXXX) in this field**.

  - Item 4b: Agency Routing Number. **Enter the code for the topic and goal that the application addresses in this field**. Applications to the Special Education Research (CFDA 84.324A) program must be submitted to a particular topic and goal (see Part II: Topic Requirements and Part III: Goal Descriptions and Requirements for additional information).

Topics	Codes
Autism Spectrum Disorders	NCSER-ASD
Cognition and Student Learning in Special Education	NCSER-CASL
Early Intervention and Early Learning in Special Education	NCSER-EIEL
Families of Children with Disabilities	NCSER-Fam
Professional Development for Teachers and School-Based Service Providers	NCSER-PD

Reading, Writing, and Language Development	NCSER-RWL
Science, Technology, Engineering and Mathematics (STEM) Education	NCSER-STEM
Social and Behavioral Outcomes to Support Learning	NCSER-SocBeh
Special Education Policy, Finance, and Systems	NCSER-SYS
Technology for Special Education	NCSER-EdTech
Transition Outcomes for Secondary Students with Disabilities	NCSER-Trans
Special Topic: Career and Technical Education for Students with Disabilities	NCSER-CTE
Special Topic: English Learners with Disabilities	NCSER-EL
Special Topic: Systems-Involved Students with Disabilities	NCSER-SysInv

Goals	Codes
Exploration (Goal One)	Exploration
Development and Innovation (Goal Two)	Development
Efficacy and Follow-Up (Goal Three)	Efficacy
Replication: Efficacy and Effectiveness (Goal Four)	Replication
Measurement (Goal Five)	Measurement

Example: If your application is a Development and Innovation project under the Autism Spectrum Disorders topic, enter the codes "NCSER-ASD" and "Development."

It is critical that you use the appropriate codes in this field and that the codes shown in this field agree with the information included in the application abstract. Indicating the correct code facilitates the appropriate processing and review of the application. Failure to do so may result in delays to processing and puts your application at risk for being identified as nonresponsive and not considered for further review.

- o Item 4c: Previous Grants.gov Tracking ID. If you are submitting a "Changed/Corrected" application (see Item 1) to correct an error, enter the Grants.gov Tracking Number associated with the application that was already submitted through Grants.gov. Contact the Program Officer listed on the application package and provide the Grants.gov tracking numbers associated with both applications (the one with the error and the one that has been corrected) and identify which one should be reviewed by the Institute.

- Item 5

Applicant Information. Enter all of the information requested, including the legal name of the applicant, the name of the primary organizational unit (e.g., school, department, division, etc.) that will undertake the activity, and the address, including the county and the 9-digit ZIP/Postal Code of the primary performance site (i.e., the Applicant Institution) location. This field is required if the Project Performance Site is located in the United States. The field for "Country" is pre-populated with "USA: UNITED STATES." For applicants located in another country, contact the Program Officer (see Part II: Topic Requirements or the list of Program Officers in Part VI.H) before submitting the application. Use the drop down menus where they are provided.

Organizational DUNS. Enter the DUNS or DUNS+4 number of the applicant organization. A **Data Universal Numbering System (DUNS)** number is a unique 9-character identification number provided by the commercial company Dun & Bradstreet (D&B) to identify organizations. If your institution does not have a DUNS number and therefore needs to register for one, a DUNS number can be obtained through the Dun & Bradstreet website http://fedgov.dnb.com/webform/displayHomePage.do.

Note: The DUNS number provided on this form must be the same DUNS number used to register on Grants.gov (and the same as the DUNS number used when registering with the SAM). **If the DUNS number used in the application is not the same as the DUNS number used to register with Grants.gov, the application will be rejected with errors by Grants.gov.**

Person to Be Contacted on Matters Involving this Application. Enter all of the information requested, including the name, telephone and fax numbers, and email address of the person to be contacted on matters involving this application. The role of this person is primarily for communication purposes on the budgetary aspects of the project. As an example, this may be the contact person from the applicant institution's office of sponsored projects. Use the drop down menus where they are provided.

- Item 6

  Employer Identification (EIN) or (TIN). Enter either the Employer Identification Number (EIN) or Tax Identification Number (TIN) as assigned by the Internal Revenue Service. If the applicant organization is not located in the United States, enter 44-4444444.

- Item 7

  Type of Applicant. Use the drop down menu to select the type of applicant. If Other, please specify.

  Small Business Organization Type. If "Small Business" is selected as Type of Applicant, indicate whether or not the applicant is a "Women Owned" small business – a small business that is at least 51% owned by a woman or women, who also control and operate it. Also indicate whether or not the applicant is a "Socially and Economically Disadvantaged" small business, as determined by the U.S. Small Business Administration pursuant to section 8(a) of the Small Business Act U.S.C. 637(a).

- Item 8

  Type of Application. Indicate whether the application is a "New" application or a "Resubmission" of an application that was submitted under a previous Institute competition and received reviewer comments. Only the "New" and "Resubmission" options apply to Institute competitions. Do not select any option other than "New" or "Resubmission."

  Submission to Other Agencies. Indicate whether or not this application is being submitted to another agency or agencies. If yes, indicate the name of the agency or agencies.

- Item 9

  Name of Federal Agency. Do not complete this item. The name of the federal agency to which the application is being submitted will already be entered on the form.

- Item 10

  Catalog of Federal Domestic Assistance Number. Do not complete this item. The CFDA number of the program competition to which the application is being submitted will already be entered on the form. The CFDA number can be found in the Federal Register Notice and on the face page of the Request for Applications.

- Item 11

Descriptive Title of Applicant's Project. **Enter a distinctive, descriptive title for the project**. The maximum number of characters allowed in this item field is 200.

- Item 12

  Proposed Project Start Date and Ending Date. Enter the proposed start date of the project and the proposed end date of the project. The start date must not be earlier than July 1, 2019, which is the Earliest Anticipated Start Date listed in this Request for Applications, and must not be later than September 1, 2019. The end date is restricted based on the duration maximums for the research goal selected (see Part III: Goal Descriptions and Requirements).

- Item 13

  Congressional District of Applicant. For both the applicant and the project, enter the Congressional District in this format: 2-character State Abbreviation and 3-character District Number (e.g., CA-005 for California's 5th district, CA-012 for California's 12th district). Grants.gov provides help for finding this information http://www.grants.gov/web/grants/applicants/applicant-faqs.html under "How can I find my congressional district code?" If the program/project is outside the U.S., enter 00-000.

- Item 14

  Project Director/Principal Investigator Contact Information. Enter all of the information requested for the Project Director/Principal Investigator, including position/title, name, address (including county), organizational affiliation (e.g., organization, department, division, etc.), telephone and fax numbers, and email address. Use the drop down menus where they are provided.

- Item 15

  Estimated Project Funding

  - Total Federal Funds Requested. Enter the total Federal funds requested for the entire project period. The total Federal funds requested must not exceed the cost maximums for the research goal selected (see Part III: Goal Descriptions and Requirements).

  - Total Non-Federal Funds. Enter the total Non-Federal funds requested for the entire project period.

  - Total Federal & Non-Federal Funds. Enter the total estimated funds for the entire project period, including both Federal and Non-Federal funds.

  - Estimated Program Income. Identify any program income estimated for the project period, if applicable.

- Item 16

  Is Application Subject to Review by State Executive Order 12372 Process? The Institute is not soliciting applications that are subject to review by Executive Order 12372; therefore, check the box "Program is not covered by E.O. 12372" to indicate "No" for this item.

- Item 17

  This is the Authorized Organization Representative's electronic signature.

By providing the electronic signature, the Authorized Organization Representative certifies the following:

- o   To the statements contained in the list of certifications, and
- o   That the statements are true, complete and accurate to the best of his/her knowledge.

By providing the electronic signature, the Authorized Organization Representative also provides the required assurances, agrees to comply with any resulting terms if an award is accepted, and acknowledges that any false, fictitious, or fraudulent statements or claims may subject him/her to criminal, civil, or administrative penalties.

Note: The certifications and assurances referred to here are described in Part VI.F.7: Other Forms Included in the Application Package).

- Item 18

  SF LLL or other Explanatory Documentation. Do not add the SF LLL here. A copy of the SF LLL is provided as an optional document within the application package. See Part VI.F.7: Other Forms Included in the Application Package to determine applicability. If it is applicable to the grant submission, choose the SF LLL from the optional document menu, complete it, and save the completed SF LLL form as part of the application package.

- Item 19

  Authorized Organization Representative. The Authorized Organization Representative is the official who has the authority both to legally commit the applicant to (1) accept federal funding and (2) execute the proposed project. Enter all information requested for the Authorized Organization Representative, including name, title, organizational affiliation (e.g., organization, department, division, etc.), address, telephone and fax numbers, and email address of the Authorized Organization Representative. Use the drop down menus where they are provided.

  Signature of Authorized Organization Representative. Leave this item blank as it is automatically completed when the application is submitted through Grants.gov.

  Date Signed. Leave this item blank as the date is automatically generated when the application is submitted through Grants.gov.

- Item 20

  Pre-application. Do not complete this item as the Institute does not require pre-applications for its grant competitions.

- Item 21

  Cover Letter. Do not complete this item as the Institute does not require cover letters for its grant competitions.

2.   Research & Related Senior/Key Person Profile (Expanded)

This form asks you to: (1) identify the Project Director/Principal Investigator and other senior and/or key persons involved in the project; (2) specify the role key staff will serve; and (3) provide contact information for each senior/key person identified. The form also requests information about the highest academic or professional degree or other credentials earned and the degree year. This form includes a "Credential/Agency Log In" box that is optional.

This form also provides the means for attaching the Biographical Sketches of senior/key personnel as PDF files. This form will allow for the attachment of a total of 40 biographical sketches: one for the Project Director/Principal Investigator and up to 39 additional sketches for senior/key staff. See Part V.D.11: Biographical Sketches of Senior/Key Personnel for information about recommended formatting and page lengths, and content to be included in the biographical sketches. The persons listed on this form should be the same persons listed in the Personnel section of the Project Narrative. If consultants are listed there, you may include a biographical sketch for each one listed. As a reminder, the Institute strongly encourages the use of SciENcv to create IES Biosketches for grant applications to the Institute.

3. Project/Performance Site Location(s)

This form asks you to identify the primary site where project work will be performed. You must complete the information for the primary site. If a portion of the project will be performed at any other site(s), the form also asks you to identify and provide information about the additional site(s). As an example, a research proposal to an Institute competition may include the applicant institution as the primary site and one or more schools where data collection will take place as additional sites. The form permits the identification of eight project/performance site locations in total. This form requires the applicant to identify the Congressional District for each site. See above, Application for Federal Assistance SF 424 (R&R), Item 13 for information about Congressional Districts. DUNS number information is optional on this form.

4. Research & Related Other Project Information

This form asks you to provide information about any research that will be conducted involving human subjects, including: (1) whether human subjects are involved; (2) if human subjects are involved, whether or not the project is exempt from the Human Subjects Regulations; (3) if the project is exempt from the regulations, an indication of the exemption number(s); and, (4) if the project is not exempt from the regulations, whether an Institutional Review Board (IRB) review is pending; and if IRB approval has been given, the date on which the project was approved; and the Human Subject Assurance number. This form also asks you: (1) whether there is proprietary information included in the application; (2) whether the project has an actual or potential impact on the environment; (3) whether the research site is designated or eligible to be designated as a historic place; and, (4) if the project involves activities outside the U.S., to identify the countries involved.

This form also provides the means for attaching a number of PDF files (see Part V.D: PDF Attachments for information about content and recommended formatting and page lengths) including the following:

- Project Summary/Abstract,

- Project Narrative and Required and Optional Appendices,

- Bibliography and References Cited, and

- Research on Human Subjects Narrative.

- Item 1

    Are Human Subjects Involved? If activities involving human subjects are planned at any time during the proposed project at any performance site or collaborating institution, you must check "Yes." (You must check "Yes" even if the proposed project is exempt from Regulations for the Protection of Human Subjects.) If there are no activities involving human subjects planned at any time during the proposed project at any performance site or collaborating institution, you may check "No" and skip to Item 2.

Is the Project Exempt from Federal Regulations? If all human subject activities are exempt from human subjects regulations, then you may check "Yes." You are required to answer this question if you answered "Yes" to the first question "Are Human Subjects Involved?"

If you answer "Yes" to the question "Is the Project Exempt from Federal Regulations?" you are required to check the appropriate exemption number box or boxes corresponding to one or more of the exemption categories. The six categories of research that qualify for exemption from coverage by the regulations are described on the U.S. Department of Education's website http://www2.ed.gov/policy/fund/guid/humansub/overview.html. Provide an Exempt Research on Human Subjects Narrative at Item 12 of this form (see Part V.D.10. Research on Human Subjects Narrative).

If you answer "No" to the question "Is the Project Exempt from Federal Regulations?" you will be prompted to answer questions about the Institutional Review Board (IRB) review.

If no, is the IRB review pending? Answer either "Yes" or "No."

If you answer "Yes" because the review is pending, then leave the IRB approval date blank. If you answer "no" because the review is not pending, then you are required to enter the latest IRB approval date, if available. Therefore, you should select "No" only if a date is available for IRB approval.

Note: IRB Approval may not be pending because you have not begun the IRB process. In this case, an IRB Approval Date will not be available. However, a date must be entered in this field if "No" is selected or the application will be rejected with errors by Grants.gov. Therefore, you should check "Yes" to the question "Is the IRB review pending?" if an IRB Approval Date is not available.

If you answer "No" to the question "Is the Project Exempt from Federal Regulations?" provide a Non-exempt Research on Human Subjects Narrative at Item 12 of this form (see Part V.D.10. Research on Human Subjects Narrative).

Human Subject Assurance Number: Leave this item blank.

- Item 2

  Are Vertebrate Animals Used? Check whether or not vertebrate animals will be used in this project.

- Item 3

  Is proprietary/privileged information included in the application? Patentable ideas, trade secrets, privileged or confidential commercial or financial information, disclosure of which may harm the applicant, should be included in applications only when such information is necessary to convey an understanding of the proposed project. If the application includes such information, check "Yes" and clearly mark each line or paragraph on the pages containing the proprietary/privileged information with a legend similar to, "The following contains proprietary/privileged information that (name of applicant) requests not be released to persons outside the Government, except for purposes of review and evaluation."

- Item 4

  Does this project have an actual or potential impact on the environment? Check whether or not this project will have an actual or potential impact on the environment.

- Item 5

  Is the research site designated or eligible to be designated as a historic place? Check whether or not the research site is designated or eligible to be designated as a historic place. Explain if necessary.

- Item 6

  Does the project involve activities outside of the United States or partnerships with international collaborators? Check "Yes" or "No." If the answer is "Yes," then you need to identify the countries with which international cooperative activities are involved. An explanation of these international activities or partnerships is optional.

- Item 7

  Project Summary/Abstract. Attach the Project Summary/Abstract as a PDF file here. See Part V.D PDF Attachments for information about content and recommended formatting and page length for this PDF file.

- Item 8

  Project Narrative. Create a single PDF file that contains the Project Narrative and Appendix A (required), as well as, when applicable, Appendix B (required for resubmissions), Appendix C (optional), Appendix D (optional), Appendix E (optional), and Appendix F (required for projects under the Efficacy and Follow-up. and the Replication: Efficacy and Effectiveness goals). Attach this single PDF file here. See Part V.D PDF Attachments for information about content and recommended formatting and page length for the different components of this PDF file.

- Item 9

  Bibliography and References Cited. Attach the Bibliography and References Cited as a PDF file here. See Part V.D PDF Attachments for information about content and recommended formatting and page length for this PDF file.

- Item 10

  Facilities and Other Resources. Do not include an attachment here. Explanatory information about facilities and other resources must be included in the Resources Section of the Project Narrative for the application and may also be included in the Narrative Budget Justification. In the project narrative of competitive proposals, applicants describe having access to institutional resources that adequately support research activities and access to schools in which to conduct the research. Strong applications document the availability and cooperation of the schools or other education delivery settings that will be required to carry out the research proposed in the application via a letter of agreement from the education organization. Include Letters of Agreement in Appendix E.

- Item 11

  Equipment. Do not include an attachment here. Explanatory information about equipment may be included in the Narrative Budget Justification.

- Item 12

Other Attachments. Attach a Research on Human Subjects Narrative as a PDF file here. You must attach either an Exempt Research on Human Subjects Narrative or a Non-Exempt Research on Human Subjects Narrative. See Part V.D PDF Attachments for information about content and recommended formatting and page length for this PDF file.

If you checked "Yes" to Item 1 of this form "Are Human Subjects Involved?" and designated an exemption number(s), then you must provide an "Exempt Research" narrative. If some or all of the planned research activities are covered by (not exempt from) the Human Subjects Regulations, then you must provide a "Nonexempt Research" narrative.

5. **Research & Related Budget (Total Federal+Non-Federal)-Sections A & B; C, D, & E; F-K**

This form asks you to provide detailed budget information for each year of support requested for the applicant institution (i.e., the Project Budget). The form also asks you to indicate any Non-Federal funds supporting the project. You should provide this budget information for each project year using all sections of the R&R Budget form. Note that the budget form has multiple sections for each budget year: A & B; C, D, & E; and F-K.

-   Sections A & B ask for information about Senior/Key Persons and Other Personnel
-   Sections C, D & E ask for information about Equipment, Travel, and Participant/Trainee Costs
-   Sections F-K ask for information about Other Direct Costs and Indirect Costs

You must complete each of these sections for as many budget periods (i.e., project years) as you are requesting funds.

Note: The narrative budget justification for each of the project budget years must be attached at Section K of the first budget period; otherwise you will not be able to enter budget information for subsequent project years.

Note: Budget information for a subaward(s) on the project must be entered using a separate form, the R&R Subaward Budget (Fed/Non-Fed) Attachment(s) Form, described in Part VI.F.6. This is the only form that can be used to extract the proper file format to complete subaward budget information. **The application will be rejected with errors by Grants.gov if subaward budget information is included using any other form or file format.**

Enter the Federal funds requested for all budget line items as instructed below. If any Non-Federal funds will be contributed to the project, enter the amount of those funds for the relevant budget categories in the spaces provided. Review the cost maximums for the research goal selected (see Part III: Research Goals).

All fields asking for total funds in this form will auto calculate.

-   Organizational DUNS

    If you completed the SF 424 R&R Application for Federal Assistance form first, the DUNS number will be pre-populated here. Otherwise, the organizational DUNS number must be entered here. See Part VI.F.1 for information on the DUNS number.

-   Budget Type

    Check the box labeled "Project" to indicate that this is the budget requested for the primary applicant organization. If the project involves a subaward(s), you must access the R&R Subaward

Budget (Fed/Non-Fed) Attachment(s) Form to complete a subaward budget (see Part VI.F.6 for instructions regarding budgets for a subaward).

- Budget Period Information

    Enter the start date and the end date for each budget period. **Enter only the number of budget periods allowed for the project as determined by the Award Duration Maximums for the relevant research goal selected for your project** (see Part III: Goal Descriptions and Requirements). Note: If you activate an extra budget period and leave it blank this may cause your application to be rejected with errors by Grants.gov.

- Budget Sections A & B

    A. Senior/Key Person. The Project Director/Principal Investigator information will be pre-populated here from the SF 424 R&R Application for Federal Assistance form if it was completed first. Then, enter all of the information requested for each of the remaining senior/key personnel, including the project role of each and the number of months each will devote to the project, i.e., calendar or academic + summer. You may enter the annual compensation (base salary – dollars) paid by the employer for each senior/key person; however, you may choose to leave this field blank. Regardless of the number of months devoted to the project, indicate only the amount of salary being requested for each budget period for each senior/key person. Enter applicable fringe benefits, if any, for each senior/key person. Enter the Federal dollars and, if applicable, the Non-Federal dollars.

    B. Other Personnel. Enter all of the information requested for each project role listed – for example Postdoctoral Associates, Graduate Students, Undergraduate Students, Secretary/Clerical, etc. – including, for each project role, the number of personnel proposed and the number of months devoted to the project (calendar or academic + summer). Regardless of the number of months devoted to the project, indicate only the amount of salary/wages being requested for each project role. Enter applicable fringe benefits, if any, for each project role category. Enter the Federal dollars and, if applicable, the Non-Federal dollars.

    Total Salary, Wages, and Fringe Benefits (A + B). This total will auto calculate.

- Budget Sections C, D & E

    C. Equipment Description. Enter all of the information requested for Equipment. Equipment is defined as an item of property that has an acquisition cost of $5,000 or more (unless the applicant organization has established lower levels) and an expected service life of more than 1 year. List each item of equipment separately and justify each in the narrative budget justification. Allowable items ordinarily will be limited to research equipment and apparatus not already available for the conduct of the work. General-purpose equipment, such as a personal computer, is not eligible for support unless primarily or exclusively used in the actual conduct of scientific research. Enter the Federal dollars and, if applicable, the Non-Federal dollars.

    Total C. Equipment. This total will auto calculate.

    D. Travel. Enter all of the information requested for Travel.

    Enter the total funds requested for domestic travel. In the narrative budget justification, include the purpose, destination, dates of travel (if known), applicable per diem rates, and number of individuals for each trip. If the dates of travel are not known, specify the estimated length of the trip (e.g., 3 days). Enter the Federal dollars and, if applicable, the Non-Federal dollars.

Enter the total funds requested for foreign travel. In the narrative budget justification, include the purpose, destination, dates of travel (if known), applicable per diem rates, and number of individuals for each trip. If the dates of travel are not known, specify the estimated length of the trip (e.g., 3 days). Enter the Federal dollars and, if applicable, the Non-Federal dollars.

Total D. Travel Costs. This total will auto calculate.

E. Participant/Trainee Support Costs. Do not enter information here; this category is not used for project budgets for this competition.

Number of Participants/Trainees. Do not enter information here; this category is not used for project budgets for this competition.

Total E. Participants/Trainee Support Costs. Do not enter information here; this category is not used for project budgets for this competition.

- Budget Sections F-K

F. Other Direct Costs. Enter all of the information requested under the various cost categories. Enter the Federal dollars and, if applicable, the Non-Federal dollars.

Materials and Supplies. Enter the total funds requested for materials and supplies. In the narrative budget justification, indicate the general categories of supplies, including an amount for each category. Categories less than $1,000 are not required to be itemized.

Publication Costs. Enter the total publication funds requested. The proposed budget may request funds for the costs of documenting, preparing, publishing or otherwise making available to others the findings and products of the work conducted under the award. In the narrative budget justification, include supporting information.

Consultant Services. Enter the total costs for all consultant services. In the narrative budget justification, identify each consultant, the services they will perform, total number of days, travel costs, and total estimated costs. Note: Travel costs for consultants can be included here or in Section D. Travel.

ADP/Computer Services. Enter the total funds requested for ADP/computer services. The cost of computer services, including computer-based retrieval of scientific, technical, and education information may be requested. In the narrative budget justification, include the established computer service rates at the proposing organization if applicable.

Subaward/Consortium/Contractual Costs. Enter the total funds requested for: (1) all subaward/consortium organization(s) proposed for the project and (2) any other contractual costs proposed for the project. Use the R&R Subaward Budget (Fed/Non-Fed) Attachment(s) Form to provide detailed subaward information (see Part VI.F.6).

Equipment or Facility Rental/User Fees. Enter the total funds requested for equipment or facility rental/user fees. In the narrative budget justification, identify each rental user fee and justify.

Alterations and Renovations. Leave this field blank. The Institute does not provide funds for construction costs.

Other. Describe any other direct costs in the space provided and enter the total funds requested for this "Other" category of direct costs. Use the narrative budget justification to further itemize and justify.

Total F. Other Direct Costs. This total will auto calculate.

- G. Direct Costs

Total Direct Costs (A thru F). This total will auto calculate.

- H. Indirect Costs

Enter all of the information requested for Indirect Costs. Principal Investigators should note that if they are requesting reimbursement for indirect costs, this information is to be completed by their Business Office.

Indirect Cost Type. Indicate the type of base (e.g., Salary & Wages, Modified Total Direct Costs, Other [explain]). In addition, indicate if the Indirect Cost type is Off-Site. If more than one rate/base is involved, use separate lines for each. 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 subawardees, not located in the territorial U.S. cannot charge indirect costs.

If you do not have a current indirect rate(s) approved by a Federal agency, indicate "None--will negotiate". **If your institution does not have a federally negotiated indirect cost rate,** you should consult a member of the Indirect Cost Group (ICG) in the U.S. Department of Education's Office of the Chief Financial Officer http://www2.ed.gov/about/offices/list/ocfo/fipao/icgreps.html to help you estimate the indirect cost rate to put in your application.

Indirect Cost Rate (percent). Indicate the most recent Indirect Cost rate(s) (also known as Facilities & Administrative Costs [F&A]) established with the cognizant Federal office, or in the case of for-profit organizations, the rate(s) established with the appropriate agency.

If your institution has a cognizant/oversight agency and your application is selected for an award, you must submit the indirect cost rate proposal to that cognizant/oversight agency office for approval.

Indirect Cost Base ($). Enter the amount of the base (dollars) for each indirect cost type. Depending on the grant program to which you are applying and/or the applicant institution's approved Indirect Cost Rate Agreement, some direct cost budget categories in the grant application budget may not be included in the base and multiplied by the indirect cost rate. Use the narrative budget justification to explain which costs are included and which costs are excluded from the base to which the indirect cost rate is applied. If your grant application is selected for an award, the Institute will request a copy of the applicant institution's approved Indirect Cost Rate Agreement.

Indirect Cost Funds Requested. Enter the funds requested (Federal dollars and, if applicable, the Non-Federal dollars) for each indirect cost type.

Total H. Indirect Costs. This total will auto calculate.

Cognizant Agency. Enter the name of the Federal agency responsible for approving the indirect cost rate(s) for the applicant. Enter the name and telephone number of the individual responsible for negotiating the indirect cost rate. If a Cognizant Agency is not known, enter "None."

- Total Direct and Indirect Costs

  Total Direct and Indirect Costs (G + H). This total will auto calculate.

- J. Fee.

  Do not enter a dollar amount here as you are not allowed to charge a fee on a grant or cooperative agreement.

- K. Budget Justification

  Attach the Narrative Budget Justification as a PDF file at Section K of the first budget period (see Part V.D.12 for information about content and recommended formatting and page length for this PDF file). Note that if the justification is not attached at Section K of the first budget period, you will not be able to access the form for the second budget period and all subsequent budget periods. The single narrative must provide a budget justification for each year of the entire project.

- Cumulative Budget. This section will auto calculate all cost categories for all budget periods included.

Final Note: The overall grant budget cannot exceed the maximum grant award for the Research Goal being applied under as listed in the table below.

Research Goal	Maximum Grant Duration	Maximum Grant Award
Exploration	Secondary Data Analysis only: 2 years	$600,000
	Primary Data Collection and Analysis: 4 years	$1,400,000
Development and Innovation	4 years	$1,400,000
Efficacy and Follow-Up	Initial Efficacy: 5 years	$3,300,000
	Follow-up: 3 years	$1,100,000
	Retrospective: 3 years	$700,000
Replication: Efficacy and Effectiveness	Efficacy Replication: 5 years	$3,600,000
	Effectiveness Study: 5 years	$4,000,000
	Re-analysis Study: 3 years	$700,000
Measurement	4 years	$1,400,000

6. R&R Subaward Budget (Fed/Non-Fed) Attachment(s) Form

This form provides the means to both extract and attach the Research & Related Budget (Total Fed + Non-Fed) form that is to be used by an institution that will hold a subaward on the grant. Please note that separate budgets are required only for subawardee/consortium organizations that perform a substantive portion of the project. As with the Primary Budget, the extracted Research & Related Budget

(Total Fed + Non-Fed) form asks you to provide detailed budget information for each year of support requested for a subaward/consortium member with substantive involvement in the project. The budget form also asks for information regarding Non-Federal funds supporting the project at the subaward/consortium member level. You should provide this budget information for each project year using all sections of the R&R Budget form. Note that the budget form has multiple sections for each budget year: A & B; C, D, & E; and F-K.

- Sections A & B ask for information about Senior/Key Persons and Other Personnel.

- Sections C, D & E ask for information about Equipment, Travel, and Participant/Trainee Costs.

- Sections F-K ask for information about Other Direct Costs and Indirect Costs.

"Subaward/Consortium" must be selected as the Budget Type, and all sections of the budget form for each project year must be completed in accordance with the R&R (Federal/Non-Federal) Budget instructions provided above in Part VI.F.5. Note that subaward organizations are also required to provide their DUNS or DUNS+4 number.

You may extract and attach up to 10 subaward budget forms. When you use the button "Click here to extract the R&R Budget (Fed/Non-Fed) Attachment," a Research & Related Budget (Total Fed + Non-Fed) form will open. Each institution that will hold a subaward to perform a substantive portion of the project must complete one of these forms and save it as a PDF file with the name of the subawardee organization. Once each subawardee institution has completed the form, you must attach these completed subaward budget form files to the R&R Subaward Budget (Fed/Non-Fed) Attachment(s) Form. Each subaward budget form file attached to this form must have a unique name.

Note: This R&R Subaward Budget (Fed/Non-Fed) Attachment(s) Form must be used to attach only one or more Research & Related Budget (Total Fed + Non-Fed) form(s) that have been extracted from this form. Note the form's instruction: "Click here to extract the R&R Budget (Fed/Non-Fed) Attachment." **If you attach a file format to this form that was not extracted from this attachment form your application will be rejected with errors by Grants.gov.**

7. Other Forms Included in the Application Package

You are required to submit the first two forms identified here. You are not required to submit the third form, Disclosure of Lobbying Activities – Standard Form LLL, unless it is applicable.

- SF 424B-Assurances-Non-Construction Programs

- Grants.gov Lobbying form (formerly ED 80-0013 form)

- Disclosure of Lobbying Activities – Standard Form LLL (if applicable)

G. SUMMARY OF APPLICATION CONTENT

R&R Form	Instructions Provided	Additional Information
Application for Federal Assistance SF 424 (R&R)	Part VI.F.1	Form provided in Grants.gov application package
Senior/Key Person Profile (Expanded)	Part VI.F.2	Form provided in Grants.gov application package
Project/Performance Site Location(s)	Part VI.F.3	Form provided in Grants.gov application package
Other Project Information	Part VI.F.4	Form provided in Grants.gov application package
Budget (Total Federal + Non-Federal)	Part VI.F.5	Form provided in Grants.gov application package
R&R Subaward Budget (Fed/Non-Fed) Attachment(s) Form (if applicable)	Part VI.F.6	Form provided in Grants.gov application package. Use this form to *extract and attach* a subaward budget(s).
SF 424B Assurances – Non-Construction Programs Grants.gov Lobbying form – Disclosure of Lobbying Activities – Standard Form LLL (if applicable)	Part VI.F.8	Forms provided in Grants.gov application package
Project Summary/Abstract	Part V.D.1	Attach PDF at Item 7 of "Other Project Information" form
Project Narrative and Appendices • Narrative • Appendix A • Appendix B (if applicable) • Appendix C (optional) • Appendix D (optional) • Appendix E (optional) • Appendix F (if applicable)	Part V.D.2-8	Project Narrative and Appendix A, and if applicable, Appendices B, C, D, E, and F must ALL be included together in one PDF attached at Item 8 of "Other Project Information" form.
Bibliography and References Cited	Part V.D.9	Attach PDF at Item 9 of "Other Project Information" form.
Research on Human Subjects Narrative (if applicable)	Part V.D.10	Attach PDF at Item 12 of "Other Project Information" form.
Biographical Sketches of Senior/Key Personnel (including Current and Pending Support)	Part V.D.11	Attach each as a separate PDF to "Senior/Key Person Profile (Expanded)" form.
Narrative Budget Justification	Part V.D.12	Attach PDF using *Section K – Budget Period 1* of the "Budget (Total Federal + Non-Federal)" form.

H. APPLICATION CHECKLIST

	Have each of the following forms been completed?
	SF 424 Application for Federal Assistance
	For item 4a, is the PR/Award number entered if this is a Resubmission following the instructions in Part VI.F.1?
	For item 4b, are the correct topic and goal codes included following the instructions in Part VI.F.1?
	For item 8, is the Type of Application appropriately marked as either "New" or "Resubmission" following the instructions in Part VI.F.1?
	Senior/Key Person Profile (Expanded)
	Project/Performance Site Location(s)
	Other Project Information
	Budget (Total Federal + Non-Federal): Sections A & B; Sections C, D, & E; Sections F - K
	R&R Subaward Budget (Federal/Non-Federal) Attachment(s) form (if applicable)
	SF 424B Assurances – Non-Construction Programs
	Grants.gov Lobbying form (formerly ED 80-0013 form)
	Disclosure of Lobbying Activities – Standard Form LLL (if applicable)
	Have each of the following items been attached as PDF files in the correct place?
	Project Summary/Abstract, using Item 7 of the "Other Project Information" form
	Project Narrative, Appendix A, and where applicable, Appendix B, Appendix C, Appendix D, Appendix E, and Appendix F as a single file using Item 8 of the "Other Project Information" form
	Bibliography and References Cited, using Item 9 of the "Other Project Information" form
	Research on Human Subjects Narrative, either the Exempt Research Narrative or the Non-exempt Research Narrative, using Item 12 of the "Other Project Information" form
	Biographical Sketches including Current and Pending Support of Senior/Key Personnel, using "Attach Biographical Sketch" of the "Senior/Key Person Profile (Expanded)" form
	Narrative Budget Justification, using Section K – Budget Period 1 of the "Budget (Total Federal + Non-Federal)" form
	Budget (Total Federal + Non-Federal): Sections A & B; Sections C, D, & E; Sections F – K for the Subaward(s), using the "R&R Subaward Budget (Federal/Non-Federal) Attachment(s)" form, as appropriate, that conforms to the Award Duration and Cost Maximums for the Research Goal selected
	Have the following actions been completed?
	The correct PDF files are attached to the proper forms in the Grants.gov application package.
	The "Check Package for Errors" button at the top of the grant application package has been used to identify errors or missing required information that prevents an application from being processed.
	The "Track My Application" link has been used to verify that the upload was fully completed and that the application was processed and validated successfully by Grants.gov before 4:30:00 p.m. Eastern Time on the deadline date.

I. PROGRAM OFFICER CONTACT INFORMATION

Please contact the Institute's Program Officers with any questions you may have about the best topic and goal for your application. Program Officers function as knowledgeable colleagues who can provide substantive feedback on your research idea, including reading a draft of your project narrative. Program Officers can also help you with any questions you may have about the content and preparation of PDF file attachments. However, any questions you have about individual forms within the application package and electronic submission of your application through Grants.gov should be directed first to the Grants.gov Contact Center at support@grants.gov, http://www.grants.gov/web/grants/support.html, or call 1-800-518-4726.

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GLOSSARY

<u>Administrative data</u>: Information that is routinely collected about students, teachers, schools, and districts by state and local education agencies to assess progress, monitor programs, or adhere to reporting requirements. Examples of data include student enrollment, class schedules, grades, and assessments; teacher assignments and schedules; electronic communications with students, parents, and teachers; reports completed for EDFacts, Civil Rights Data Collection, and other federal initiatives; and fiscal records. Administrative data also include non-routine special data collections, for example, on a specific agency program, project or policy or on a specific type of student, teacher, school, or district.

<u>Assessment</u>: "Any systematic method of obtaining information, used to draw inferences about characteristics of people, objects, or programs; a systematic process to measure or evaluate the characteristics or performance of individuals, programs, or other entities, for purposes of drawing inferences; sometimes used synonymously with test" (AERA, 2014).

<u>Assessment framework</u>: Includes the definition of the construct(s); theoretical model on which the assessment is based; and the rationale for validity evidence to support its use for the intended purpose and population.

<u>Authentic education setting</u>: Proposed research must be relevant to education in the United States and must address factors under the control of the U.S. education system (be it at the national, state, local, and/or school level). To help ensure such relevance, the Institute requires researchers to work within or with data from authentic education settings. The Institute permits a limited amount of laboratory research (see Part III Research Goals) if it is carried out in addition to work within or with data from authentic education settings, but will not fund any projects that are exclusively based in laboratories. Authentic education setting varies by education level as set out below.

- Authentic Education Settings for Infants and Toddlers are defined as:
    - Homes
    - Child care
    - Natural settings for early intervention services

- Authentic Preschool Settings are defined as:
    - Homes
    - Child care
    - Preschool programs
    - Natural settings for early childhood special education services

- Authentic K-12 Education Settings are defined as:
    - Schools and alternative school settings (e.g., alternative schools, juvenile justice settings)
    - Homes, provided that the intervention is school-based (i.e., programs must be coordinated through the school or district)
    - School systems (e.g., local edu20cation agencies or state education agencies)
    - Formal programs that take place after school or out of school (e.g., after-school programs, distance learning programs, online programs) under the control of schools or state and local education agencies
    - Settings that deliver direct education services (as defined in the Elementary and Secondary Education Act of 1965, as amended by the Every Student Succeeds Act of 2015 http://www2.ed.gov/policy/elsec/leg/esea02/index.html)
    - Career and Technical Education Centers affiliated with schools or school systems

Career technical education (CTE): CTE comprises instruction in the skills and knowledge required to enter into and succeed in specific occupations. At the secondary level, CTE introduces students to possible career fields and allows them to begin to build marketable skills; at the postsecondary level, CTE provides an entry point for new or returning students to learn specific knowledge and specialized skills in a particular occupational field.

Case: A case is a unit of intervention administration and data analysis. A case may be a single participant or a cluster of participants (e.g., a classroom, community).

Compliant: The part of the process of screening applications for acceptance for review that focuses on adherence to the application rules (e.g., completion of all parts of the application, inclusion of the required appendices).

Conceptual replication: Studies that systematically vary certain aspects of a previous efficacy or effectiveness study's research methods or procedures in order to determine if similar impacts are found under different conditions.

Concurrent validity: Evidence that indicates how accurately scores can predict criterion scores that are obtained at a similar time.

Convergent validity: "Evidence based on the relationship between test scores and other measures of the same or related construct" (AERA, 2014).

Construct: "The concept or the characteristic that an assessment is designed to measure" (AERA, 2014).

Construct coverage: The degree to which an assessment measures the full range of skills, abilities, and/or content needed to adequately represent the target construct.

Cost Analysis: An analysis that can help schools, districts, and states understand both total and per student monetary costs of implementing any given intervention (e.g., expenditures for personnel, facilities, equipment, materials, training, and other relevant inputs).

Cost-effectiveness Analysis: An analysis that can help schools, districts and states compare different interventions and identify which are most likely to lead to the greatest gains in student outcomes for the lowest costs.

Development process: The process used to develop and/or refine an intervention.

Differential item functioning (DIF): "For a particular item in a test, a statistical indicator of the extent to which different groups of test takers who are at the same ability level have different frequencies of correct responses or, in some cases, different rates of choosing various item options" (AERA, 2014).

Direct replications: Studies that use the same, or as similar as possible, research methods and procedures as a previous efficacy or effectiveness study to provide more robust evidence of the intervention's beneficial impact.

Discriminant validity evidence: "Evidence indicating whether two tests interpreted as measures of different constructs are sufficiently independent (uncorrelated) and that they do, in fact, measure two distinct constructs" (AERA, 2014).

Effectiveness study: The independent evaluation of a fully-developed education intervention with prior evidence of efficacy to determine whether it produces a beneficial impact on student education

outcomes relative to a counterfactual when implemented under routine practice in authentic education settings.

Efficacy replication: A study that evaluates the impact an intervention with prior evidence of efficacy when it is implemented under ideal or non-routine conditions with or without an independent evaluator.

End user: The person intended to be responsible for the implementation of the intervention.

Feasibility: The extent to which the intervention can be implemented within the requirements and constraints of an authentic education setting.

Fidelity of implementation: The extent to which the intervention is being delivered as it was designed to be by end users in an authentic education setting.

Final manuscript: The author's final version of a manuscript accepted for publication that includes all modifications from the peer review process.

Final research data: The recorded factual materials commonly accepted in the scientific community as necessary to document and support research findings. For most studies, an electronic file will constitute the final research data. This dataset will include both raw data and derived variables, which will be fully described in accompanying documentation. Researchers are expected to take appropriate precautions to protect the privacy of human subjects. Note that final research data does not mean summary statistics or tables, but rather, the factual information on which summary statistics and tables are based. Final research data do not include laboratory notebooks, preliminary analyses, drafts of scientific papers, plans for future research, peer-reviewed reports, or communications with colleagues.

Follow-up study: A study that tests the longer-term impact of an intervention that has been shown to have beneficial impacts on student education outcomes in a previous or ongoing evaluation study (e.g. initial efficacy, efficacy replication, or effectiveness study).

Horizontal equating: Putting two or more assessments that are considered interchangeable on a common scale.

Ideal conditions: Conditions that provide a more controlled setting under which the intervention may be more likely to have beneficial impacts. For example, ideal conditions can include more implementation support than would be provided under routine practice in order to ensure adequate fidelity of implementation. Ideal conditions can also include a more homogeneous sample of students, teachers, schools, and/or districts than would be expected under routine practice in order to reduce other sources of variation that may contribute to outcomes.

Independent evaluation: An evaluation carried out by individuals who did not and do not participate in the development or distribution of the intervention and have no financial interest in the outcome of the evaluation.

Initial efficacy evaluation: A test of the impact of a fully developed intervention that has not been rigorously evaluated in a prior causal impact study.

Intervention: The wide range of education curricula; instructional approaches; professional development; technology; and practices, programs, and policies that are implemented at the student, classroom, school, district, state, or federal level to improve student education outcomes.

Laboratory research: An approach to research that allows for careful control of extraneous factors (e.g., by conducting research in a more controlled environment or with a more controlled situation than would be expected in authentic education settings). Laboratory research may be conducted in a laboratory or in an authentic education setting.

Malleable factors: Things that can be changed by the education system to improve student education outcomes.

Mediators: Factors through which the relationship between the intervention and relevant outcomes occurs (e.g., many interventions aimed at changing student education outcomes work through changing teacher behavior and/or student behavior).

Moderators: Factors that affect the strength or the direction of the relationship between the intervention and relevant outcomes (e.g., characteristics of the setting, context, teachers, and/or students).

Pilot study: A study designed to provide evidence of the promise of the fully-developed intervention for achieving its intended outcomes when it is implemented in an authentic education setting. A pilot study differs from studies conducted during the development process. The latter are designed to inform the iterative development process (e.g., by identifying areas of further development, testing individual components of the intervention); therefore, they are expected to lead to further development and revision of the intervention. The pilot study is designed to help determine whether a finalized version of the intervention performs as expected. Depending on the results, pilot studies may lead to further development of the intervention or they may lead to a rigorous evaluation of the intervention.

Predictive validity evidence: "Evidence indicating how accurately test data collected at one time can predict criterion scores that are obtained at a later time" (AERA, 2014).

Re-analysis study: A study that re-analyzes existing data from a previous efficacy or effectiveness evaluation using the same or different analytic method in order to determine the reliability or reproducibility of findings from a previous evaluation.

Reliability: "the consistency of scores across replications of a testing procedure, regardless of how this consistency is estimated or reported (e.g., in terms of standard errors, reliability coefficients..., generalizability coefficients, error/tolerance ratios, item response theory (IRT) information functions, or various indices of classification consistency)." (AERA, 2014).

Responsive: The part of the process of screening applications for acceptance for review. This screening includes making sure applications (1) are submitted to the correct competition and/or goal and (2) meet the basic requirements set out in the Request for Applications.

Retrospective study: A study that analyzes retrospective (historical) secondary data to test the impact if an intervention implemented in the past..

Routine conditions: Conditions under which an intervention is implemented that reflect (1) the everyday practice occurring in homes, childcare, natural settings for infants and toddlers, classrooms, schools, and districts and (2) the heterogeneity of the target population.

Secondary datasets: Datasets that are often generated from nationally representative surveys or evaluations (e.g., http://nces.ed.gov/pubsearch/licenses.asp); administrative data from federal, state, or district agencies or from non-public organizations; and/or data from previous research studies.

STEM: STEM refers to student academic outcomes in science, technology, engineering, and/or mathematics.

Student education outcomes: The outcomes to be changed by the intervention. The intervention may be expected to directly affect these outcomes or indirectly affect them through intermediate student or instructional personnel outcomes. There are six types of student education outcomes for this competition. The topic you choose will determine the types of student education outcomes you can study.

- Developmental outcomes: Outcomes pertaining to cognitive, communicative, linguistic, social, emotional, adaptive, functional or physical development.

- School readiness: Pre-reading, language, vocabulary, early STEM (science, technology, engineering, and/or mathematics) knowledge, social and behavioral competencies that prepare young children for school.

- Student academic outcomes: The Institute supports research on a diverse set of student academic outcomes that fall under two categories. The first category includes academic outcomes that reflect learning and achievement in the core academic content areas [e.g., measures of understanding and achievement in reading, writing, and STEM (science, technology, engineering, and/or mathematics)]. The second category includes academic outcomes that reflect students' successful progression through the education system (e.g., course and grade completion and retention in grade K through 12; high school graduation and dropout; postsecondary enrollment, progress, and completion).

- Social and behavioral competencies: Social skills, attitudes, and behaviors that may be important to students' academic and post-academic success.

- Functional outcomes: Skills or activities that are not considered academic or related to a child's academic achievement; "functional" is often used in the context of routine activities of everyday living and can include outcomes that improve educational results and transitions to employment, independent living, and postsecondary education for students with disabilities.

- Employment and Earnings Outcomes: Long-term, post-school student outcomes that include indicators such as hours of employment, job stability, wages and benefits.

Theory of change: The underlying process through which key components of a specific intervention are expected to lead to the desired student education outcomes. A theory of change should be specific enough to guide the design of the evaluation (e.g., selecting an appropriate sample, measures and comparison condition).

Usability: The extent to which the intended user understands or can learn how to use the intervention effectively and efficiently, is physically able to use the intervention, and is willing to use the intervention.

Validity: "The degree to which evidence and theory support the interpretations of test scores for proposed uses of tests...When test scores are interpreted in more than one way...both to describe a test taker's current level of the attribute being measured and to make a prediction about a future outcome, each intended interpretation must be validated" (AERA, 2014).

Vertical equating: Putting two or more assessments that are considered to measure the same construct across different levels of development on a common scale.

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