INSTITUTE OF EDUCATION SCIENCES

REQUEST FOR APPLICATIONS

Education Research Grants
CFDA Number: 84.305A

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 on August 23, 2018**	**http://www.grants.gov/**
Applicants Notified	By July 1, 2019	https://iesreview.ed.gov/
Possible Start Dates	July 1, 2019 to September 1, 2019	

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Special Note for FY 2019

The Institute has revised two of its Research Goals 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 FY 2019, 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. Goal Four will now support all replications evaluating the impact of an intervention including effectiveness studies. In addition, the maximum amount of funding that may be requested under Goal Four has changed slightly from recent years. Please read the Request for Applications carefully to make sure your Goal Three or Goal Four application meets the new requirements for these research goals.

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 Education Research Grants program (CFDA 84.305A). Through this program, the Institute seeks to improve the quality of education for all students -- prekindergarten through postsecondary and adult education -- by advancing the understanding of and practices for teaching, learning, and organizing education systems. By identifying what works, what doesn't, and why, the goal of this research grant program is to improve education outcomes for all students, particularly those at risk of failure.

For the FY 2019 competition, the Institute will consider only applications that are responsive and compliant to the requirements described in this Request for Applications (RFA) *and* submitted electronically via Grants.gov (http://www.grants.gov) on time. Separate funding announcements are available on the Institute's website that pertain to the other research and research training grant programs funded through the Institute's National Center for Education Research (https://ies.ed.gov/ncer/) and to the discretionary grant competitions funded through the Institute's National Center for Special Education Research (https://ies.ed.gov/ncser/). 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 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 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 within 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.I.

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 the Education Research Grants program **must meet the requirements** set out under the subheadings below (1) Student Education Outcomes, (2) Authentic Education Settings, (3) Topics, (4) Research Goals, and (5) Dissemination in order to be sent forward for scientific peer review.[1]

1. Student Education Outcomes

All research supported under the Education Research Grants program **must** address student education outcomes including measures of student academic outcomes. The Institute also supports research on social and behavioral competencies that support success in school and afterwards, and on employment

[1] See Part 1.E Changes in the FY 2019 Request for Applications for a description of the changes in the research goal structure and special topics.

and earnings outcomes when appropriate. Student education outcomes should align with the theory of change guiding the proposed research and applicants should describe this alignment when discussing all student outcomes and their measures.

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. The second category includes academic outcomes that reflect students' **successful progression** through the education system.

The Institute defines student academic outcomes of interest by education level:

(i) For **Prekindergarten** (3- to 5-year-olds), school readiness is the primary student academic outcome. School readiness includes pre-reading, pre-writing, and early-STEM (science, technology, engineering, and/or mathematics skills) as measured by specific assessments (e.g., researcher-developed assessments, standardized tests).

(ii) For **Kindergarten through High School**, the primary student academic outcomes include learning, achievement, and higher-order thinking in the core academic content areas of reading, writing, and STEM as measured by specific assessments (e.g., researcher-developed assessments, standardized tests, grades, end-of-course exams, exit exams) and student progression through the education system (e.g., course and grade completion, retention, high school graduation, and dropout).

(iii) For **Postsecondary Education**, the primary student academic outcomes are access to, persistence in, progress through, and completion of postsecondary education, which includes developmental education courses and bridge programs as well as programs that lead to occupational certificates or associate's or bachelor's degrees. For students enrolled in developmental education and undergraduate writing, STEM, and CTE courses, student academic outcomes also include learning, achievement, and higher-order thinking as measured by specific assessments (e.g., researcher-developed assessments, standardized tests, grades, end-of-course exams, exit exams).

(iv) For **Adult Education,**[2] the primary student academic outcomes are achievement in reading, writing, English language proficiency, and mathematics as measured by specific assessments as well as access to, persistence in, progress through, and completion of adult education courses and programs.

Social and Behavioral Competencies

The Institute supports research on **social and behavioral competencies**, defined as social skills, attitudes, and behaviors that are important to students' success in school and beyond. Social and behavioral competencies may be the primary focus of your research under certain topics so long as your application makes clear how they relate to academic outcomes.

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[2] Students at least 16 years old and outside the K-12 system who are preparing for, transitioning into, or currently enrolled in adult education (i.e., Adult Basic Education, adult English literacy programs, and preparation programs for high school equivalency exams).

Employment and Earnings Outcomes

The Institute supports research on student **employment and earnings outcomes**, such as hours of employment, job stability, and wages and benefits when appropriate to do so. In general, such outcomes are most pertinent to studies proposed under the Career and Technical Education (CTE) and Postsecondary and Adult Education topics.

2. 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 (be it at the national, state, local, 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 (including PreK centers) and 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. Formal programs not under the control of schools or state and local education agencies are not considered as taking place in authentic education settings and are not appropriate for study under the current Education Research Grants program.

The Institute defines authentic education settings by education level:

- **Authentic PreK Education Settings**
    - Center-based prekindergarten programs for 3 to 5 year old children
        - Public prekindergarten programs
        - Preschools
        - Child care centers and nursery schools
        - Head Start programs
- **Authentic K-12 Education Settings**
    - Schools and alternative school settings (e.g., alternative schools or juvenile justice settings)
    - School systems (e.g., local education 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)
    - Career and Technical Education Centers affiliated with schools or school systems

- **Authentic Postsecondary Education Settings**
    - 2-year and 4-year colleges and universities that have education programs, including online and distance learning programs, that lead to occupational certificates or associate's or bachelor's degrees
    - Career and Technical Education Centers that lead to occupational certificates or associate's or bachelor's degrees
- **Authentic Adult Education Settings**
    - Settings where eligible participants receive one or more of the following services from eligible providers (e.g., state and local education agencies, community-based organizations, institutions of higher education, public or non-profit agencies, and libraries). See Title II of the Workforce Innovation and Opportunity Act (WIOA) for clarification of eligibility.
        - Adult Basic Education (ABE)
        - Adult civics education (e.g., Integrated English Literacy and Civics Education programs)
        - Adult English language acquisition programs
        - Adult Secondary Education (ASE)
        - Family literacy programs (e.g., programs that aim to help improve both parents' and children's academic outcomes)
        - Integrated education and training (e.g., programs that provide adult education services concurrent with training in a specific occupation)
        - Workplace adult education and literacy programs (e.g., employer-sponsored or hosted adult education and literacy services that don't necessarily train in a particular occupation)

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**.

3. Topics

The Institute developed a topic structure consisting of standing and special topics to help focus the work proposed by researchers. Standing topics accept applications on a regular basis, whereas special topics accept applications for a limited time to highlight specific areas of research interest and need and foster potentially promising lines of research. The Institute is offering two new special topics in FY 2019: Foreign Language Education and Social Studies.

Each of the standing and special topics has one (or more) dedicated Program Officers 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.I. Your application must be directed to one of the 14 topics accepting applications for the FY 2019 competition.

4. Research Goals

The Institute uses a goal structure to encourage focused research along the continuum of research, development, and evaluation activities necessary for building a scientific education research enterprise. Therefore, your application must be directed to one of five research goals (see Part III Research Goals): Exploration; Development and Innovation; Efficacy and Follow-up; Replication: Efficacy and Effectiveness; or Measurement. The research goal identifies the 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 Research Goals for a complete description of the Efficacy and Follow-up 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 see Part III Research Goals 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.

5. 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 (http://ies.ed.gov/funding/researchaccess.asp) that requires all grantees to submit their peer-reviewed scholarly publications to the ERIC (Education Resources Information Center) 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 Education Research Grants program are shared with all interested audiences, the Institute also **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 major publications, presentations, and products you expect to produce.
    - Institute-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 Institute-funded Research and Development (R&D) Centers, Research Networks, or Regional Educational Laboratories (REL)
            - R&D Centers: https://ies.ed.gov/ncer/RandD/;
            - Research Networks: https://ies.ed.gov/ncer/research/researchNetworks.asp;
            - RELs: https://ies.ed.gov/ncee/edlabs/.
    - Institute-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, the Institute encourages researchers to consider how these products could be brought to market to increase their dissemination and use.

- Institute-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.
  - 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.
  - 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 include information on the cost of the intervention.
  - 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 expects dissemination to include:
    - Findings of a beneficial impact on student outcomes. These 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. These 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 include information on the intervention's cost and cost effectiveness.
  - 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 its 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's 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 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 the Institute 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). Be sure to address all parts of the DMP (see Goal Three and Goal Four) and clearly describe your justification for your proposed plans and how they meet the expectations of the IES Data Sharing Policy. 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.

D. PRE-AWARD REQUIREMENTS

Applicants considered for funding following scientific peer review are required to provide further information about the 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 data sets you have proposed to analyze. You may be asked for additional information about your Research Plan and Dissemination Plan (required for all applications) or your Data Management Plan (only required for applications submitted under the Efficacy and Follow-up and 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 resubmitting an application that was reviewed in an earlier competition, **should carefully read all relevant parts of this RFA**, including the requirements for each topic (see Part II Topics), the requirements and recommendations for each goal (see Part III Research Goals), and the instructions for preparing your application (see Part V Preparing your Application).

Major changes to the RFA for the Education Research Grants program (CFDA 84.305A) competition in FY 2019 are listed below and described fully in the relevant sections of the RFA.

- The Institute has revised Goals Three and Four 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:
    - 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.
    - 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.
    - 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.
    - 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:
    - Better support the continuum of research from efficacy to effectiveness;
    - 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;

    - 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
    - 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 cost.
    - Goal Two now requires a cost analysis for interventions delivered in the pilot study, and encourages a cost-effectiveness analysis when possible.
    - 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 Institute has revised the standing and special topics. Starting in FY 2017, the Institute introduced a set of Special Topics to provide additional encouragement for research in under-studied areas that appear promising for improving student education outcomes and that are of interest to policymakers and practitioners. For FY 2019:
    - Career and Technical Education has been moved from a special topic to a standing topic.
    - Two special topics that were competed in FY 2017 and FY 2018, Arts in Education and Systemic Approaches to Educating Highly Mobile Students, are no longer being competed. Applicants who applied to one of these topics in the past, or who are otherwise interested in either topic, should contact the Institute's Program Officers for advice about the best topic for your application.
    - The Institute is introducing two new special topics: Foreign Language Education and Social Studies.
- The Sample requirements for the Cognition and Student Learning topic and the Education Technology topic have changed; all applications that address the education outcomes of students before they enter kindergarten must be submitted to the Early Learning Programs and Policies topic.
- The Institute has expanded its definition of Student Education Outcomes to include employment and earnings outcomes when appropriate.
- 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 **Principal Investigators and Authorized Organization Representatives** should read the 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**
  - ✓ Meet **Sample, Outcomes, and Setting** requirements for the selected *Topic* (see Part II).
  - ✓ Meet **Project Narrative** requirements for the selected *Research Goal* (see Part III).
- **COMPLIANCE**
  - ✓ Include all **required content** (see Part V.D).
  - ✓ Include 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**
  - ✓ Submit electronically via Grants.gov no later than **4:30:00 p.m. 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 scientific 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: TOPICS

A. APPLYING TO A TOPIC

For the FY 2019 Education Research Grants program, you must submit your application to one of the fourteen research topics (12 standing, 2 special) described in Part II. You must identify your chosen topic area on the SF-424 Form (Item 4b) of the Application Package (see Part VI.F.1), or the Institute may reject your application as nonresponsive to the requirements of this RFA. Each topic has specific Sample, Outcomes, and Setting requirements that must be met for an application to be found responsive and sent forward for scientific peer review.

The Institute developed a topic structure consisting of standing and special topics to help focus the work proposed by researchers. Standing topics accept applications on a regular basis, whereas special topics accept applications for a limited time to highlight specific areas of research interest and need and foster potentially promising lines of research.

The Institute recognizes that some of the topics overlap and that in some cases, any one application could meet the Sample, Outcomes, and Setting requirements of more than one topic. If your application meets the requirements of more than one topic accepting applications in FY 2019, the Institute recommends that you choose the topic best suited for your application by considering the key student outcomes, the grade(s) from which data will be collected, the setting in which the research will be most relevant, the expertise of your research team, and the alignment of your primary research questions to the purpose of a particular topic. For help identifying the best topic for your application, whether you are a first time or returning applicant, contact the Institute's Program Officers (listed under each topic) to discuss the appropriateness of a particular project for submission under a specific topic. You will also get feedback on your topic choice from the Institute's Program Officers when you submit your Letter of Intent (see Part IV.C.1 Submitting a Letter of Intent).

If you propose to conduct research that focuses on students with or at risk for disabilities from birth through high school, you must apply to the separate grant programs run by the Institute's National Center for Special Education Research (http://ies.ed.gov/ncser).

For each of the 12 standing topics and the 2 special topics identified for FY 2019, the following pages list the Program Officer(s), describe the purpose and requirements, and (for the 12 standing topics) describe some Institute-identified gaps in the research.

1. Career and Technical Education

Program Officer: Dr. Corinne Alfeld (202-245-8203; Corinne.Alfeld@ed.gov)

a) Purpose

The Career and Technical Education (CTE) topic supports research to understand the implementation and effects of CTE programs and policies at the K-12 level on the education and career outcomes of students.[3] Formerly called *vocational education*, CTE generally comprises training in the academic, technical, and employability 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. The CTE topic is restricted to K-12, but longitudinal studies with postsecondary education and employment outcomes are permitted as long as students first experience the program or policy in the K-12 system. The Postsecondary and Adult Education topic accepts applications for research on CTE offered by colleges and universities or adult education providers.

CTE has been evolving and expanding at a rapid pace in recent years as industry and education leaders focus increasingly on high school graduates' readiness for college and careers. The expansion of CTE programs in K-12 has been based on the assumption that they are an effective means for preparing high school students for the labor market of the future (Association for Career and Technical Education, 2017). While there is some evidence to support this assumption (e.g., Dougherty, 2016), more research is needed.

The Institute encourages researchers to examine current K-12 CTE programs, curricula, and instructional practices; students' exposure to and experience with CTE opportunities; and the effect of participation in different types of programs on a variety of student outcomes. In particular, there is a critical need for more information about the mechanisms, impacts, and costs of CTE that policymakers and education leaders can use in decision making. In addition, the Institute invites applications to develop and validate new, or further validate existing, measures or assessments of CTE learning and outcomes.

The long-term outcome of this research will be an array of tools and strategies (e.g., curricula, instructional approaches, assessments), as well as programs and policies (e.g., career pathways, diploma endorsements) that are effective for improving academic and technical learning and attainment from CTE.

b) Requirements

Applications under the CTE topic **must** meet the Sample, Outcomes, and Setting requirements listed below in order to be responsive and sent forward for scientific peer review.

Sample

- Your research **must** focus on students at any level from **kindergarten through high school**.

[3] Please note that to apply to the CTE topic, your research must focus on CTE at the K-12 level; projects with a postsecondary CTE focus should apply to the Postsecondary and Adult Education topic.

Outcomes

- Your research **must** include measures of student academic outcomes.
- In addition, your research **must** include at least one CTE outcome that demonstrates mastery of content or skills (e.g., CTE credits earned, technical skills assessment, industry certification or employment in a field related to the CTE training).
- Your research may also include measures of student social and behavioral competencies (i.e., social skills, attitudes, or behaviors) and/or measures of employment and earnings (e.g., hours of employment, wages).
- If your research focuses on CTE teachers (e.g., their professional development or assessment), you **must** include measures of the educators' knowledge, skills, beliefs, behaviors, and/or practices that are the focus of your research in addition to the required measures of student academic outcomes.

Setting

- Your research **must** be conducted in authentic K-12 education settings, or on data collected from such settings. Data may be collected from work sites (e.g., in the case of work-based learning) so long as they are affiliated with schools or school settings and data are also collected from these settings.

c) Gaps in CTE Research

While the Institute supports field-generated research that addresses any of its research goals (see Part III Goal Requirements), the Institute has also identified critical research gaps in the CTE domain (described below) and encourages applications that address these issues. The Institute's scientific 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 Institute encourages research that explores the relationships between career-focused school, program, or curricular features and student academic and employment outcomes. Such studies could make use of existing administrative datasets from school districts, institutions of higher education, states, industries, employers, and other relevant organizations. Especially important is the disaggregation of data by CTE field and student subgroup (e.g., gender, race/ethnicity, disability status).
- The Institute is interested in projects that propose a rigorous approach to the iterative development and piloting of new CTE programs, or the adaptation of existing programs, with strong attention to promising program features and potential variations in student outcomes.
- There is a critical need for evaluations of existing CTE programs and policies (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 to overall impact analyses, the Institute strongly encourages attention to subgroup impacts and collection of implementation data to help explain variation in outcomes.
- The field is in critical need of reliable and valid measures of students' technical, occupational, and career readiness skills. Of particular value to students are technical skills assessments that are portable across education settings and employers (e.g., national certifications) in fields with high demand for workers.

- Finally, there is a need for exploration, development, efficacy, and measurement research on CTE teachers, including qualifications, recruitment, training/professional development, and retention.

Visit our website for information on this topic and to view the abstracts of previously funded projects. Please contact the Program Officer for this topic to discuss your choice of topic and goal and to address other questions you may have.

2. Cognition and Student Learning

Program Officer: Dr. Erin Higgins (202-706-8509; Erin.Higgins@ed.gov)

a) Purpose

The Cognition and Student Learning (CASL) topic supports research that capitalizes on our understanding of how the mind works to inform and improve education practice in reading, writing, STEM (science, technology, engineering, and/or mathematics), and study skills.

Through this topic, the Institute is interested in applying theories of how the mind acquires, processes, and uses information to the improvement of education practice, including study strategies, instructional approaches, curricula, and assessment. Under the CASL topic, the Institute also supports exploring the cognitive processes underlying the acquisition of knowledge and skills in one or multiple content areas, such as reading, writing, and STEM. The Institute encourages applicants to the CASL topic to be actively engaged with K-12 teachers and other practitioners when formulating their research plans to facilitate the identification of research questions that are meaningful and practical in authentic education settings. Involvement of practitioners helps to ensure that the materials, tasks, assessments, and interventions developed and evaluated through the CASL topic are appropriate for the age of the students and the setting in which the research is being conducted and/or the setting in which the intervention or assessment is intended for use.

The long-term outcome of this research will be an array of tools and strategies (e.g., instructional approaches, curricula, assessments) based on principles of learning and information processing gained from cognitive science and cognitive neuroscience and documented to be efficacious for improving learning in authentic education settings.

b) Requirements

Applications under the CASL topic **must** meet the Sample, Outcomes, and Setting requirements listed below in order to be responsive and sent forward for scientific peer review.

(1) Sample

- Your research **must** focus on students at any level from **kindergarten through high school.**
- A limited portion of your research may include typically developing college students (e.g., those found in university participant pools) under the Exploration, Development and Innovation, and Measurement goals, if you can justify that college students will provide information that generalizes to your student population of interest (students at any level from kindergarten through high school). However, research **must** be conducted with the student population of interest within the award period. If your student population of interest spans high school and postsecondary education, you may apply to this topic or to the Postsecondary and Adult Education topic.
    - For Development and Innovation projects, the pilot study must be conducted with your student population of interest.
    - For Measurement projects, the validation study must be conducted with your student population of interest.

(2) Outcomes

- Your research **must** include student outcome measures of reading, writing, STEM skills, or study skills.

(3) Setting

- Your research **must** be conducted in authentic K-12 education settings or on data collected from such settings.
- A limited amount of laboratory research may be done under the Exploration, Development and Innovation, and Measurement goals (see Part III Research Goals); however, you may not propose to conduct 100 percent of your research in the laboratory. A portion of the proposed research **must** take place in the setting(s) outlined for this topic. 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.

c) Gaps in Cognition and Student Learning Research

While the Institute supports field-generated research that addresses any of its research goals (see Part III Research Goals), the Institute has also identified critical research gaps in the CASL domain (described below) and encourages applications that address these issues. The Institute's scientific 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.

- As researchers continue to identify cognitive processes that underlie reading, writing, and STEM that could be changed through intervention, there is a growing need for measurement tools that can validly and reliably capture students' skills in these areas in authentic education settings. For example, executive function skills are associated with success in school (e.g., Blair, 2002; Blair and Razza, 2007; Zelazo, Blair, and Willoughby, 2016), and interventions to improve those skills have been developed and tested for efficacy (Diamond and Lee, 2011). However, there are not adequate measures that can be used by teachers in classrooms to assess students' executive function skills at the individual student level (McClelland and Cameron, 2012). The measures of executive function skills that do exist were primarily developed for laboratory or clinical purposes, so their use beyond those purposes is limited.
- Through many years of high quality research, the learning sciences community has identified a large set of principles of learning that have the potential to improve student education outcomes. Most of the research to date has focused on a single principle at a time to examine its unique contribution to learning. However, in the classroom, these principles interact. Research is needed that examines groups of learning principles to figure out optimal ways to implement them in classrooms as well as to determine the best ways to combine principles in order to achieve the largest impact on student education outcomes (Koedinger, Booth, and Klahr, 2013; Richey and Nokes-Malach, 2015).
- There is growing interest in and excitement around education technology products that can personalize instruction (Bulger, 2016). Personalizing instruction effectively requires a comprehensive understanding of how people learn. Cognitive scientists may consider forging new collaborations with education technology developers to help facilitate the development of personalized learning products that actually take advantage of what is known about how people learn. Such collaborations also provide unique opportunities to explore new research questions in the context of education technology.
- In recent years, neuroscientists have dramatically increased our knowledge of healthy brain function and development and have identified numerous environmental factors that impact it. However, in education practice, many products are being identified as 'brain-based' without any grounding in neuroscience research. Research is needed that bridges the education community's excitement about the brain with the science of how the brain works (Howard-Jones, 2014). Such

research has the potential to provide more insights into how students learn and will contribute to the development and evaluation of interventions that are grounded in the science of how the brain works.

Visit our website for more information on this topic and to view the abstracts of previously funded projects. 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 Learning Programs and Policies

Program Officer: Dr. Caroline Ebanks (202-245-8320; Caroline.Ebanks@ed.gov)

a) Purpose

The Early Learning Programs and Policies (Early Learning) topic supports research on the improvement of school readiness skills (pre-reading; pre-writing; early STEM (science, technology, engineering, and/or mathematics; and social and behavioral competencies) of 3- to 5-year-olds. The Institute supports research to identify malleable factors at the policy and systems, classroom, and individual levels that support children's learning and development in preschool and the early elementary school years. The Institute is particularly interested in research to reduce the sociodemographic academic achievement gap that is present when children from low-income families begin formal schooling (Chernoff et al., 2007; Denton Flanagan and McPhee, 2009; Engel et al., 2016; Mulligan, Hastedt, and McCarroll, 2012). All work supported under this topic must be conducted in center-based prekindergarten (PreK) settings and focus on curricula, teacher professional development, or instructional practices; early childhood policy and systems-level initiatives at the federal, state, or local level; and/or assessments of children, teachers, classrooms, or program quality.

- If your research is focused on children in PreK to kindergarten transition programs that are implemented the summer before the start of kindergarten, you should apply to the Early Learning topic.
- If your research is focused on early childhood educators (including professional development or assessment), you should apply to the Early Learning topic.

The long-term outcome of this research will be an array of tools and strategies (e.g., assessments, instructional approaches, programs, and policies) that have been documented to be effective for improving school readiness skills of 3- to 5-year-olds in center-based PreK settings.

b) Requirements

Applications under the Early Learning topic **must** meet the Sample, Outcomes, and Setting requirements listed below in order to be responsive and sent forward for scientific peer review.

(1) Sample

- Your research **must** focus on **PreK children** 3 to 5 years old.
- Research on early childhood educator preparation (pre-service training) is restricted to the Exploration, Development and Innovation, and Measurement goals. Pre-service training research submitted under the Efficacy and Follow-up or Replication: Efficacy and Effectiveness goals will be considered nonresponsive and will not be sent forward for scientific peer review.[4]

(2) Outcomes

- Your research **must** include measures of children's school readiness skills (i.e., pre-reading, pre-writing, early STEM skills), social and behavioral competencies, or both.

[4] The reason for this restriction is that there is not enough time for researchers to measure the effects of an intervention on early childhood educator *and* student outcomes within the maximum duration of an Efficacy and Follow-up or Replication: Efficacy and Effectiveness award.

- Research addressing early childhood educators (e.g., their professional development or assessment) **must** include measures of their knowledge, skills, beliefs, behaviors, and/or practices in addition to the required measures of children's school readiness skills.

(3) Setting

- Your research **must** be conducted in center-based PreK programs or use data collected from such programs, which are defined as public PreK programs, preschools, child care centers, nursery schools, and Head Start programs.
- All proposed research **must** have a center-based PreK classroom component. Your research may not be focused solely or primarily on home or parenting programs that are implemented in the child's home or in non-center-based PreK settings (i.e., home-based child care settings). Applications proposing this type of research will be considered nonresponsive and will not be accepted for review.

c) Gaps in Early Learning Research

While the Institute supports field-generated research that addresses any of its research goals (see Part III Research Goals), the Institute has also identified critical research gaps in the Early Learning domain (described below) and encourages applications that address these issues. The Institute's scientific 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 on the impact of early childhood policies (e.g., availability and amount of subsidies, educator training and program licensing requirements, quality rating and improvement systems, PreK to K transition practices) and variations in PreK programming (e.g., one- versus two-year or universal versus targeted programs) on children's school readiness skills (Sabol et al., 2013; Sarama et al., 2012; Weiland and Yoshikawa, 2013).
- Costs per program hour vary widely among early childhood programs. Research is needed on the cost-effectiveness of various programs and models.
- Research is needed on parent/family preferences and priorities in choosing early learning settings for their children.
- Early childhood educators need a substantial amount of training and ongoing support to foster young children's acquisition of pre-academic and social skills (Diamond et al., 2013; Domitrovich et al., 2009; Pianta et al., 2008; Pianta and Hadden, 2008; Powell et al., 2010). Research is needed to understand the role of mentors and coaches in professional development programs and the mechanisms by which the provision of training and ongoing support to early childhood educators (e.g., lead teachers, teaching assistants, and program directors) improves instruction, teacher-child relationships, and children's school readiness skills.
- The Institute invites research on methods to identify highly mobile (e.g., homeless, in foster care, or military-dependent) 3- to 5-year-old children and increase their access to center-based PreK programs. Research is also needed on the development and evaluation of PreK interventions for highly mobile children enrolled in center-based PreK programs, especially those implemented

through federally-funded programs (e.g., Head Start and Early Head Start[5]) or through federal policy (e.g., McKinney-Vento Homeless Assistance Act[6]).

- Recent research (Colwell et al., 2013; Diamond et al., 2013; Gordon et al., 2013; Sabol et al., 2013; Weiland and Yoshikawa, 2013) suggests that the early learning field would benefit from advances in measurement.
    - State use of kindergarten readiness assessments is rapidly growing. Research is needed on what measures most accurately predict children's academic outcomes both in kindergarten and throughout elementary school.
    - Current school readiness measures often focus on one domain (e.g., language or literacy) and require intensive training to be administered reliably. There is a need for measures that assess school readiness across multiple domains with a diverse population of children (e.g., dual language learners) and that are reliably and easily administered by practitioners.
    - There is a need for measures linked to state guidelines and program quality standards for early learning. Research could be done in collaboration with states to develop such measures for use in state early childhood accountability systems.
    - There is a need for screening measures that can be used by early childhood educators and other early childhood program staff to identify young children in need of in-depth assessment and more intensive intervention services.

Visit our website for more information on this topic and to view the abstracts of previously funded projects. 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] See Early Childhood Homelessness in the United States: 50-State Profile (2016) for profiles of homeless children in Head Start and Early Head Start. https://www.acf.hhs.gov/sites/default/files/ecd/homelessness_profile_package_with_blanks_for_printing_508.pdf

[6] See Education for Homeless Children and Youths Program Non-Regulatory Guidance (2016) https://www2.ed.gov/policy/elsec/leg/essa/160240ehcyguidance072716updated0317.pdf

4. Education Leadership

Program Officer: Dr. Katina Stapleton (202-245-6566; Katina.Stapleton@ed.gov)

a) Purpose

The Education Leadership (Leadership) topic supports research on programs, policies, and practices to support leaders in K-12 education systems at the school, district, or state level in order to improve leadership in ways that can lead to beneficial student education outcomes. Education leaders include district superintendents and administrators, school principals, and other personnel in leadership roles such as teacher-leaders, vice- and assistant principals, school boards, turn-around specialists, curriculum supervisors, talent management specialists, assessment directors, and principal supervisors.

The Leadership topic recognizes the critical role education leaders play in creating safe and supportive learning environments for students, improving the skills of their staffs, implementing policies and programs, managing systems efficiently, and leading organizational change. Education leaders are also seen as key to the successful implementation of improvements in education systems. The Institute is interested in research to better understand the roles of leaders in managing and improving systems and how their leadership capacity can be improved.

The long-term outcome of this research will be an array of leadership practices, programs (e.g., in-service principal training on conducting teacher observations and providing feedback), assessments, and policies (e.g., recruitment, retention, and principal evaluation) that have been demonstrated to support leaders in ways that are linked to improvement in student achievement.

b) Requirements

Applications under the Leadership topic **must** meet the Sample, Outcomes, and Setting requirements listed below in order to be responsive and sent forward for scientific peer review.

(1) Sample

- The Education Leadership topic allows research on practicing education leaders (in-service) and/or people training to become education leaders (pre-service) within the following guidelines:
    - **In-Service:** Your research **must** focus on practicing education leaders at the school, district, state, or regional level that serve students from **kindergarten through high school**.
    - **Pre-service:** Your research **must** focus on people enrolled in preparation programs designed to train leaders to work in education systems at the school, district, state, or regional level that serve students from kindergarten through high school. There are no restrictions on the type (e.g., certificate or master's) of leadership preparation program that your sample is enrolled in, but **the length of the program must be no more than 24 months.**

(2) Outcomes

- Your research **must** include measures of whether the changes in education leadership expected to improve student outcomes are occurring (e.g., leaders' knowledge, skills, and/or behaviors targeted for improvement by professional development).
- Your research **must** include measures of student academic outcomes alone or in conjunction with student social and behavioral competencies. Your student education outcomes should be chosen

because of their expected links to the intermediate outcomes you are examining. Aggregated outcomes (e.g., at the student subgroup, school, or district level) are acceptable.

(3) Setting

- Your research **must** be conducted in authentic K-12 education settings or on data collected from such settings.

c) Gaps in Education Leadership Research

While the Institute supports field-generated research that addresses any of its research goals (see Part III Research Goals), the Institute has also identified critical research gaps in the Education Leadership domain (described below) and encourages applications that address these issues. The Institute's scientific 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.

- Emerging research identifies the knowledge, skills, and abilities *generally* needed by education leaders to support student learning and multiple potential pathways through which education leaders can support student learning (Grissom and Loeb, 2011; Grissom, Loeb, and Master, 2013; Ingersoll, Dougherty, and Sirinides, 2017; Osborne-Lampkin, Folsom, and Herrington, 2015; Sebastian and Allensworth, 2012; Sebastian, Allensworth, and Huang, 2016). The Institute invites further research on how leaders can influence student education outcomes through their influence on school climate and core teaching and learning activities. The Institute also invites research on the specific leadership competencies and behaviors needed in challenging education settings (e.g., persistently low-performing schools, high-poverty schools and districts).
- Implicit in many theories about school reform is the idea that "having the right leader(s) in the right school at the right time" matters (Leithwood et al., 2004; Leithwood, Harris, and Strauss, 2010). The Institute welcomes exploratory research on the relationship between student education outcomes and district policies regarding identification and selection of education leaders, assignment of leaders to specific schools, leadership turnover, and the distribution of leadership roles and responsibilities within a school (i.e., distributed leadership).
- The Institute invites applications to evaluate fully developed leadership interventions that have the potential to improve student education outcomes, including those developed and/or implemented through one of the U.S. Department of Education's discretionary grant programs or implemented through federal policy (Herman et al., 2017). Similarly, the Institute invites applications to evaluate state and local policies to improve district and school leadership (Scott, 2017).
- Education leaders are increasingly being held responsible for the academic success of their students (Clifford, 2015; Grissom, Kalogrides, and Loeb, 2014; McMahon, Peters, and Schumacher, 2014). Judgments about the effectiveness of leaders in improving student outcomes are dependent on having reliable, valid measures of leadership competencies and behaviors. The Institute is interested in the validation of existing leadership measures and the development and validation of new leadership measures for research, formative assessment, and accountability purposes. The Institute is also interested in efficacy studies that evaluate whether the use of leadership evaluation systems leads to improved student education outcomes.

Visit our website for more information on this topic and to view the abstracts of previously funded projects. 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. Education Technology

Program Officer: Dr. Edward Metz (202-245-7550; Edward.Metz@ed.gov)

a) Purpose

The Education Technology topic supports research on innovative and emerging forms of education technologies intended for use in authentic education settings (e.g., schools, after-school programs, and distance learning or online programs under the control of schools or state and local education agencies) by students, teachers, or other instructional personnel, with the goal of improving academic performance among students in kindergarten through high school.

The Institute supports research on a wide range of education technology products (e.g., apps, intelligent tutors, assessments, robotics, manipulatives, wearable technology, virtual and augmented reality), tools, technology-dependent interventions (e.g., blended-learning or flipped classroom interventions), social media innovations (e.g., texting, video outlets such as YouTube, peer social networking websites, user-generated content websites, curation websites, open education resources and materials) and Makerspace interventions (workspaces for students to create their own products to promote learning). The Institute is particularly interested in understanding how technology may be used to expand educational opportunities in underserved areas (such as low-income and rural communities) and to close achievement gaps. The Institute is also interested in how technologies can provide better and quicker feedback to school administrators, teachers, and students on student performance and areas for improvement.

Research under this topic is focused on the innovative use of technology. Other topics may be a better fit if the technology is already well-established or if the main focus is on student learning and achievement in specific content areas (e.g., reading, writing, or STEM) or instructional practices that do not require innovative uses of technology.

The long-term outcome of this research will be to advance the field's understanding of the potential of education technology to improve student education outcomes, and a deeper understanding of who benefits from technology under what conditions.

b) Requirements

Applications under the Education Technology topic **must** meet the Sample, Outcomes, and Setting requirements listed below in order to be responsive and sent forward for scientific peer review.

(1) Sample

- Your research **must** focus on students at any level from **kindergarten through high school.**
- Research on education technology interventions for teachers or other instructional staff **must** focus on interventions designed to provide **in-service staff** with supports and skills to improve academic instruction.

(2) Outcomes

- Your research **must** include student outcome measures of reading, writing, STEM skills, or study skills.
- Research focused on how teachers or other instructional personnel use technology to facilitate instruction **must** include measures of the focal teaching and/or teacher constructs.

(3) Setting

- Your research **must** be conducted in authentic K-12 education settings or on data collected from such settings.

c) Gaps in Education Technology Research

While the Institute supports field-generated research that addresses any of its research goals (see Part III Goal Requirements), the Institute has also identified critical research gaps in the Education Technology domain (described below) and encourages applications that address these issues. The Institute's scientific 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.

- Teachers continue to integrate new education technologies into their classroom practice. In a 2015 national survey, 93 percent of K to 12 teachers reported that they regularly use digital tools for instruction and assessment, but their perceived effectiveness varied by grade level and academic content area (http://www.teachersknowbest.org/reports). The Institute is interested in exploratory research on how teachers are using new forms of technology in their classrooms and how these uses are linked to student education outcomes as a first step in improving education technologies to support teaching and learning.
- Since 2002, the Institute has invested approximately $90 million in education technology products through its Small Business Innovation Research (SBIR) program, some of which show promise for supporting student learning and for supporting teacher instruction. The Institute is interested in further research to determine the efficacy of these products, particularly as they are adopted by districts or large numbers of schools for routine use in classrooms.
- Games for learning are gaining support among educators who recognize that well-designed games can facilitate student engagement, persistence, and learning. A recent meta-analysis indicated that digital games significantly enhanced student learning relative to non-game control conditions (Clark, Tanner-Smith, and Killingsworth, 2014). The Institute is interested in research to understand the elements and mechanics of game-based learning and conditions under which games can promote learning. The Institute is also interested in research on learning games that embed assessments to automatically measure student performance during gameplay, provide scaffolding to enhance individualized learning, and replace traditional forms of paper-based tests.
- The Institute is interested in research on dynamic forms of technology-delivered assessments that could be used in schools to provide adaptive, personalized, and real-time feedback to support learning (i.e., formative assessments) as well as those that measure knowledge and understanding of complex concepts with reduced time and greater accuracy (i.e., diagnostic or summative assessments). Currently, little is known about the types of data that could be gathered through education technologies to provide valid and reliable information about student learning. More research is needed to identify and optimize features of dynamic assessment for use by teachers and other education professionals.

Visit our website for more information on this topic and to view the abstracts of previously funded projects. 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. Effective Teachers and Effective Teaching

Program Officer: Dr. Wai-Ying Chow (202-245-8198; Wai-Ying.Chow@ed.gov)

a) Purpose

The Effective Teachers and Effective Teaching (Effective Teachers) topic supports research on K-12 classroom teaching and strategies for improving classroom teaching in ways that promote student learning and achievement in reading and writing; STEM (science, technology, engineering, and/or mathematics); and -- for English Learners -- English language proficiency, from kindergarten through high school.

Through this topic, the Institute is interested in identifying and understanding (1) the specific knowledge and skills a K-12 teacher must possess to promote student learning; (2) effective assessment of teacher knowledge and skills; (3) strategies to help teachers acquire the knowledge and skills they need to improve classroom instruction; and (4) effective programs and policies for teacher recruitment, retention, certification, and evaluation that lead to improved student learning. The Institute welcomes applications from a variety of disciplines, including industrial-organizational psychology and cognitive science, to identify the micro-level and context-specific teaching behaviors linked to student outcomes. For instance, industrial-organizational psychology utilizes strategies like job analysis, identification of relevant job performance dimensions, and measurement of knowledge and skills for performing specific jobs that could be applied to the study of teaching. The Institute encourages applicants to include measures of student education outcomes that align with the theory of change guiding the proposed research.

The long-term outcome of this research will be an array of instructional practices, programs (e.g., professional development interventions), assessments, and policies (e.g., recruitment, retention, and teacher evaluation) that have been demonstrated to be effective for improving and assessing teaching and teachers in ways that are linked to improved student achievement.

b) Requirements

Applications under the Effective Teachers topic **must** meet the Sample, Outcomes, and Setting requirements listed below in order to be responsive and sent forward for scientific peer review.

(1) Sample

- Your research **must** focus on teachers or other instructional personnel (e.g., coaches of teachers) at any level from **kindergarten through high school**.
- Research on teacher preparation (pre-service training and experience) is restricted to the Exploration, Development and Innovation, and Measurement goals. Teacher preparation research submitted under the Efficacy and Follow-up or Replication: Efficacy and Effectiveness goals will be considered nonresponsive and will not be sent forward for scientific peer review.[7]

(2) Outcomes

- Your research **must** include measures of the teaching and/or teacher (or other instructional personnel) constructs that are the focus of your research.
- Your research **must** include measures of student academic outcomes.

[7] The reason for this restriction is that there is not enough time for researchers to measure the effects of an intervention on teachers or other instructional personnel *and* student outcomes within the maximum duration of an Efficacy and Follow-up or Replication: Efficacy and Effectiveness award.

(3) Setting

- Your research **must** be conducted in authentic K-12 education settings or on data collected from such settings.

c) Gaps in Effective Teachers Research

While the Institute supports field-generated research that addresses any of its research goals (see Part III Research Goals, the Institute has also identified critical research gaps in the Effective Teachers domain (described below) and encourages applications that address these issues. The Institute's scientific 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 field needs a more comprehensive and testable theoretical framework for understanding how teaching affects student outcomes (e.g., Gitomer, 2009). Specifically, the field would benefit from understanding the key constructs of teaching and the processes by which these constructs are interconnected, and circumstances under which these interconnections influence student outcomes. This knowledge would help pinpoint the specific knowledge and skills needed by a K-12 teacher to promote student learning, focus efforts to develop psychometrically strong measures of teaching, and focus professional development interventions.
- The field would benefit from research examining the basic cognitive processes of professional learning and the developmental sequence of the major skills necessary for teaching. Researchers are encouraged to consider cognitive science research that identifies basic principles of knowledge acquisition and memory and that elaborates distinct differences in the ways that experts and novices organize and use information (e.g., Chi, 2011; Dunlosky et al., 2013) as they consider the professional learning of instructional personnel.
- The cultural, linguistic, and ethnic diversity of the U.S. student population continues to grow and education disparities persist (Snyder, de Bray, and Dillow, 2018). Some teachers report a lack of preparedness to instruct students who are from low socioeconomic backgrounds, racial or ethnic minorities, or English learners (Banilower et al., 2013). Research is needed on the actual skills teachers need to provide effective instruction to students from various backgrounds (sometimes referred to as cultural and linguistic competence, cultural proficiency, or responsiveness) (APA Presidential Task Force on Educational Disparities, 2012; National Research Council, 2000).
- There is a need for evaluations of various approaches to teacher recruitment, retention, certification, assessment, and compensation implemented by states and school districts, and the relation between these approaches and student education outcomes.
- Preparation for professional teaching (also referred to as pre-service training or teacher education) is widely varied (e.g., Cochran-Smith et al., 2016) and rigorous scientific study of teacher preparation and its connection to later teacher and student outcomes is very limited (e.g., Cochran-Smith and Zeichner, 2010; Wilson, Floden, and Ferrini-Mundy, 2001). The field would benefit from research exploring which aspects of pre-service training (e.g., timing, duration, and student population of supervised field experience) are associated with K-12 student academic outcomes in the teacher's first classrooms post-graduation.

Visit our website for more information on this topic and to view the abstracts of previously funded projects. 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. English Learners

Program Officer: Dr. Molly Faulkner-Bond (202-245-6890; Molly.Faulkner-Bond@ed.gov)

a) Purpose

The English Learners topic supports research to improve the education outcomes of English Learners (ELs) from kindergarten through high school. 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 learning and achievement expectations for students at their grade level.

Through this topic, the Institute is interested in finding ways to reduce the academic achievement gap for the growing number of EL students across the primary and secondary grades. This work should reflect the diversity of the EL population (e.g., in terms of home language and proficiency, English language proficiency, and age of entry in U.S. schools) as well as the variability in their school experiences (e.g., school composition, language of instruction, course placement, classroom practices, school culture, and policy and criteria for EL identification and reclassification).

The long-term outcome of this research will be an array of tools and strategies (e.g., assessments, instructional approaches, programs, and policies) that have been documented to be effective for improving academic outcomes for EL students from kindergarten through high school.

b) Requirements

Applications under the English Learners topic **must** meet the Sample, Outcomes, and Setting requirements listed below in order to be responsive and sent forward for scientific peer review.

(1) Sample

- Your research **must** focus on **EL students** at any level from **kindergarten through high school** and may include non-ELs to serve as a comparison group. In addition, your research may also include a focus on **EL educators** (e.g., professional development or assessment).
- Research on teacher preparation (pre-service training and experience) is restricted to the Exploration, Development and Innovation, and Measurement goals. Teacher preparation research submitted under the Efficacy or Replication - Efficacy and Effectiveness goals will be considered nonresponsive and will not be sent forward for scientific peer review.[8]

(2) Outcomes

- Your research **must** include student academic outcome measures.
- Research addressing EL educators (e.g., their professional development or assessment) **must** include measures of the educators' knowledge, skills, beliefs, behaviors, and/or practices that are the focus of your research in addition to the required measures of student academic outcomes.

[8] The reason for this restriction is that there is not enough time for researchers to measure the effects of an intervention on EL educators *and* student outcomes within the maximum duration of an Efficacy and Follow-up or Replication: Efficacy and Effectiveness award.

(3) Setting

- Your research **must** be conducted in authentic K-12 education settings or on data collected from such settings.

c) Gaps in English Learners Research

While the Institute supports field-generated research that addresses any of its research goals (see Part III Research Goals), the Institute has also identified critical research gaps in the English Learners domain (described below) and encourages applications that address these issues. The Institute's scientific 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.

- Schools use a variety of monolingual and bilingual instructional programs to help ELs learn English and academic content, and a persistent interest in EL research is studying and comparing the effects of such programs on ELs' language development and academic achievement. To effectively make such comparisons or evaluate these programs, however, researchers should consider both the classroom-level factors that characterize such programs in practice (which may vary from one school or district to another; Li et al., 2016), and the policy-level factors that affect which ELs choose or are tracked into different programs (Steele et al., 2017; Valentino and Reardon, 2014), as well as possible interactions among the two (Hopkins, Lowenhaupt, and Sweet, 2015; Menken and Solorza, 2015). Research that attends to such factors may provide a more nuanced and actionable portrait of what types of environments are likely to help ELs succeed.
- The majority of ELs in most states (Ruiz Soto, Hooker, and Batalova, 2015) and nationwide speak Spanish as their home language. Accordingly, many interventions have been developed or adapted to provide dual language supports for Spanish speakers. More research and development is needed to provide dual language supports for ELs who speak other home languages, or who enroll in schools or programs where dual language support may be impractical (at least in the short term) due to teacher capacity, linguistic diversity, or both.
- In the past few years, nearly all states have updated their English Language Proficiency (ELP) standards and assessments, and many have also revised or are revising their systems and criteria for EL identification (Cook and Linquanti, 2015; Linquanti and Bailey, 2014) and reclassification (Linquanti and Cook, 2015). These changes may influence EL progress and achievement in future years. There may be timely opportunities to take advantage of these shifts with strategic study designs (e.g., time-series designs, or cross-state comparisons based on shifts to common measures or criteria) to investigate how changes in policy and assessment are associated with the academic outcomes of EL students.
- More research is needed that focuses on older ELs, particularly at the secondary level. Whether they are newly arrived refugees or immigrants, or "long-term ELs" who have yet to reach proficiency, older ELs may differ from younger ELs in terms of the challenges they face and the supports that they need. For example, course-taking policies and opportunities can play a major role on older ELs' access and achievement (Callahan and Shifrer, 2016; Thompson, 2017; Umansky, 2016). Additionally, findings and materials developed for or on younger students (who are studied far more often than older students; Baker, Basaraba, and Polanco, 2016) may not generalize to older students. As such, research is needed to develop and evaluate models, materials, and measures that are appropriate for older EL students.
- The social, emotional, and behavioral experiences and characteristics of ELs are understudied. In addition to being linguistic minorities, ELs also are more likely to be ethnic minorities, and to come

from low socioeconomic status backgrounds. Based on circumstances like these, ELs face a variety of potential challenges and inequalities in their educational experiences (Cervantes-Soon et al., 2017; Jiménez-Castellanos and García, 2017). The potential effects of such inequalities have not been rigorously studied; there are also opportunities to develop new models, interventions, or measures to help ELs develop strong social and behavioral competencies that may help them succeed in school.

Visit our website for more information on this topic and to view the abstracts of previously funded projects. 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. Improving Education Systems

Program Officer: Dr. Corinne Alfeld (202-245-8203; Corinne.Alfeld@ed.gov)

a) Purpose

The Improving Education Systems (Systems) topic supports research on K-12 education at the school, district, state, or national level. Projects under this topic focus on specific practices, programs, and policies intended to improve education outcomes across large groups of students or to improve the system's ability to implement reforms (e.g., whole school reforms; resource reallocation across schools/districts based on student need).

Because of the multiple actors and complexities involved in education systems, the Institute is especially interested in understanding the processes underlying the successful implementation of programs and policies to better understand how and why they may affect student academic outcomes. The Institute encourages applicants to be actively engaged with stakeholders (e.g., practitioners, students, parents) when planning research. In this way, research supported under the Systems topic has the potential to clarify the types of policies and systems that are beneficial for students, the necessary conditions to support systemic improvements, and the factors that may enhance or impede systems-level change. The Institute encourages work that explores heterogeneity within and across schools and/or districts and examines potential variation in outcomes of different policies.

The long-term outcome of this research will be the identification of an array of practices, programs, and policies that improve the operation of districts and schools in ways that improve student academic outcomes.

b) Requirements

Applications under the Systems topic **must** meet the Sample, Outcomes, and Setting requirements listed below in order to be responsive and sent forward for scientific peer review.

(1) Sample

- Your research **must** focus on education systems at the school, district, state, or national level that serve students in **kindergarten through high school**.

(2) Outcomes

- Your research **must** include measures of whether the systemic changes expected to improve student education outcomes are occurring (e.g., a project on a policy that increases curriculum requirements should measure how those requirements are actually being implemented).
- Your research **must** include measures of student academic outcomes alone or in conjunction with student social and behavioral competencies. Your student education outcomes should be chosen because of their expected links to the intermediate outcomes you are examining. Aggregated outcomes (e.g., at the student subgroup, school, or district level) are acceptable.

(3) Setting

- Your research **must** be conducted in authentic K-12 education settings or on data collected from such settings.

c) Gaps in Improving Education Systems Research

While the Institute supports field-generated research that addresses any of its research goals (see Part III Research Goals), the Institute has also identified critical research gaps in the Improving Education Systems domain (described below) and encourages applications that address these issues. The Institute's

scientific 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 Every Student Succeeds Act (2015) provides more flexibility in decision making to states. The Institute invites research on how new policies, programs, or practices developed by states (e.g., state-designed accountability systems; rural districts' use of federal funding) are related to improved student education outcomes, particularly for disadvantaged students.
- Low-performing schools are a persistent problem in the U.S. (Dragoset et al., 2017). New frameworks and approaches are needed to inform policymakers and practitioners about the combination of strategies that may be needed to produce meaningful improvements in low-performing schools and about the role of research in supporting an effective improvement process.
- Unequal access to resources due to income segregation between districts contributes to continuing achievement gaps in the U.S. (Owens, 2017). Better measures of poverty (e.g., Dynarski and Michaelmore, 2017; National Forum on Education Statistics, 2015; Randolph and Prejean-Harris, 2016) and income segregation (Saporito, 2017)[9] may be used to pinpoint disadvantage and understand where redistricting or other system-wide interventions are needed. Research is also needed on programs and policies designed to improve student outcomes and reduce achievement gaps throughout K-12 education (e.g., "wraparound" services; advanced courses and course recovery; increased instructional time; rotating schedules; alternative discipline policies).
- The Institute is interested in the development and evaluation of policies, programs, and practices to better identify and educate gifted students from traditionally underserved populations such as minority students, low-income students, those in small-town or rural communities, highly mobile students, and English learners (Azano et al., 2014; Hamilton et al., 2018; Kettler, Russell, and Puryear, 2015; Siegle et al., 2016).
- The Institute encourages research on programs and policies to keep students at risk of dropout in school and to attract recent dropouts back to school, including those with multi-tiered (e.g., community, school, and individual level) supports (Freeman and Simonson, 2015). The Institute also encourages research on the coordination of city, county, or state agencies such as social service, public health, and juvenile justice that may be needed to meet the multiple needs of students at high risk for education failure (Culhane et al., 2010).
- The Institute also invites research analyzing existing state and district administrative data from education agencies (e.g., state longitudinal data systems[10]), data from other government agencies (e.g., social services, justice, or labor), and/or data from nationally representative surveys (Fitzgerald, Levesque, and Pfeiffer, 2015). Especially welcomed are innovative approaches to linking and analyzing such data to inform efforts to improve student education outcomes.

View our website for more information on this topic and to view the abstracts of previously funded projects. 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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[9] See also https://nces.ed.gov/programs/edge/
[10] See https://nces.ed.gov/Programs/SLDS/

9. Postsecondary and Adult Education

Program Officers: Dr. James Benson (202-245-8333; James.Benson@ed.gov)
Dr. Meredith Larson (202-245-7037; Meredith.Larson@ed.gov)

a) Purpose

The Postsecondary and Adult Education topic supports research on the improvement of education outcomes for students in college and in adult education programs.

Through this topic, the Institute is interested in understanding how to increase student access to, persistence in, progress through, and completion of postsecondary and adult education, including associate's and bachelor's degree programs and programs leading to occupational certificates or industry-recognized certifications. **The Institute is primarily interested in research that is focused on improving outcomes for low-income and historically-disadvantaged students in postsecondary and adult education, and for students from all backgrounds who are attending open- and broad-access institutions.**[11] The Institute welcomes research addressing student services, financial support, and other policies and programs to improve student education outcomes, academic outcomes, social and behavioral competencies, and employment and earnings outcomes. The Institute also seeks research to improve teaching and learning in adult education (including programs that may incorporate job training or postsecondary experience); developmental education; and undergraduate writing, STEM, and CTE courses.

The long-term outcome of this program will be an array of tools and strategies (e.g., practices, assessments, programs, policies) that have been documented to be effective for improving education and post-education outcomes of postsecondary students and adult learners.

b) Requirements

Applications under the Postsecondary and Adult Education topic **must** meet the Sample, Outcomes, and Setting requirements listed below in order to be responsive and sent forward for scientific peer review.

(1) Sample

- Your research **must** focus on individuals who are 16 years old or older and are preparing for, transitioning into, or currently enrolled in postsecondary or adult education.
    - If you include students with disabilities in your sample, discuss the specific type(s) of disability to be examined and how you will determine that students have such a disability.

(2) Outcomes

- Your research **must** include at least one student education outcome measure from the following:
    - Access to, persistence in, progress through, or completion of a postsecondary or adult education program.

[11] Open- and broad-access institutions include community colleges and other postsecondary institutions that accept a majority of students who apply for admission.

- Academic outcomes (e.g., course grades, course completion, or validated achievement measures aligned to course content[12]) for students enrolled in developmental education or taking writing, STEM, or CTE courses at the undergraduate level.
- Reading, writing, English language proficiency, or mathematics skills for students in developmental education courses or adult education programs.

- In addition to the above outcomes, your research may also include other relevant outcomes as appropriate (e.g., employment and earnings outcomes, social-behavioral competencies).

(3) Setting

- If you are conducting primary data collection, you **must** collect data from an authentic postsecondary or adult education setting. If your project relies upon secondary data, your project database **must** include data collected from an authentic postsecondary or adult education setting. These data may include administrative data collected from postsecondary institutions, postsecondary systems, or the National Student Clearinghouse, as well as administrative or program data collected from adult education settings. Projects within this topic may also include primary or secondary data from authentic K to 12 education settings and from virtual instruction that is under the control of an authentic postsecondary or adult education setting.

c) Gaps in Postsecondary and Adult Education Research

While the Institute supports field-generated research that addresses any of its research goals (see Part III Research Goals), the Institute has also identified critical research gaps in the Postsecondary and Adult Education domain (described below) and encourages applications that address these issues. The Institute's scientific 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 to develop and test promising curriculum reform strategies, including integrating technology, adapting instruction to meet individual students' learning needs, incorporating competency-based approaches to assessment, and aligning curricula to labor market demand (Barker et al., 2004; Bell and Federman, 2013; Reddy et al., 2013).
- Research is needed to determine effective professional development and support strategies for postsecondary and adult education instructors and to improve instruction to support student learning and persistence (Weimer and Lenz, 1997; National Research Council, 2012).
- Research is needed to identify, develop, and test reforms that systems and institutions can enact so that students can complete degrees and credentials in a timely manner. These reforms may include a range of strategies such as clear career pathways and systemic policies to facilitate transfer of credits and stacking of credentials (Bailey, Jaggar, and Jenkins, 2015; Rosenbaum et al., 2015).
- Recent NCER-funded research[13] has documented substantial variation in labor market returns to associate's degrees and occupational certificates across programs of study and by student gender.

[12] Researchers are encouraged to include course grades and/or course completion as an outcome, rather than relying solely on validated achievement measures aligned to course content.

Such variation has also been found for graduates of bachelor's degree programs. More research is needed to develop and test initiatives aimed at moving students to completion of marketable degrees and credentials and placing them in rewarding occupations.

- Research is needed to understand the changes states and programs are making under the Workforce Innovation and Opportunity Act (WIOA) (e.g., use of career pathways, integrating education into one-stop career centers) and the effects of such changes.
- Research is needed on the effectiveness of modifications to long-standing federal and state aid programs as well as new state and local aid programs that aim to reduce college costs or make college free.
- Much of the research to date on two-generation programs (e.g., postsecondary or adult education programs that include early childhood programs or Head Start programs that partner with postsecondary or adult education providers) has focused on children's academic outcomes and adults' parenting and basic literacy outcomes. Less is known about how participation in such programs may improve a fuller range of adults' academic skills and attainment outcomes and the mechanisms of such improvements. Research is needed on two-generation programs to determine whether or how such programs affect adult students' outcomes.
- Research is needed on interpersonal (e.g., teamwork, communication) and intrapersonal (e.g., self-regulation) competencies, how they influence postsecondary and adult education outcomes, how to develop them, how to integrate them into curricula and bundled supports, and how to measure them (National Academies of Sciences, Engineering, and Medicine, 2017).

Visit our website for more information on this topic and to view the abstracts of previously funded projects. Please contact the Program Officers for this topic to discuss your choice of topic and goal and to address other questions you may have.

[13] A synthesis of findings from the Center for Analysis of Postsecondary Education and Employment is available here: https://capseecenter.org/labor-market-returns-sub-baccalaureate-college-review/

10. Reading and Writing

Program Officer: Dr. Rebecca Kang McGill-Wilkinson (202-245-7613; Rebecca.McGill@ed.gov)

a) Purpose

The Reading and Writing (Read/Write) topic supports research on the improvement of reading and writing skills of students from kindergarten through high school.

Through this topic, the Institute is interested in improving learning, higher-order thinking, and achievement in reading and writing. The Institute encourages researchers to explore malleable factors (e.g., children's behaviors, instructional practices) that are associated with better reading and writing outcomes, as well as mediators and moderators of the relations between these factors and student outcomes, for the purpose of identifying potential points of intervention. The Institute is also interested in the development and rigorous evaluation of reading and writing interventions. The Institute also continues to solicit research to develop and validate assessments of reading and writing appropriate for students from kindergarten through high school.

The long-term outcome of this research will be an array of tools and strategies (e.g., curricula, assessments, instructional approaches) that are documented to be effective for improving or assessing reading and writing.

b) Requirements

Applications under the Read/Write topic **must** meet the Sample, Outcomes, and Setting requirements listed below in order to be responsive and sent forward for scientific peer review.

(1) Sample

- Your research **must** focus on students at any level from **kindergarten through high school.**

(2) Outcomes

- Your research **must** include student measures of reading and/or writing outcomes.

(3) Setting

- Your research **must** be conducted in authentic K-12 education settings or on data collected from such settings.

c) Gaps in Reading and Writing Research

While the Institute supports field-generated research that addresses any of its research goals (see Part III Research Goals), the Institute has also identified critical research gaps in the Read/Write domain (described below) and encourages applications that address these issues. The Institute's scientific 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.

- Although advances have been made in understanding how children learn to write, less is known about how individuals become proficient writers (Graham et al., 2012; Shanahan, 2015). On the 2011 NAEP writing assessment, only 27 percent of eighth and 12th graders were at or above the proficient level in writing and 20 percent of eighth graders and 21 percent of 12th graders could not write at the basic level. The field would benefit from research on writing instruction and achievement and on interventions designed to increase writing proficiency and quality. Consistent, reliable measurement of writing quality is difficult to achieve (Graham, Harris, and Hebert, 2011).

The field would benefit from measurement projects designed to develop and validate measures of writing quality for use by both researchers and practitioners.

- Access to computers and other electronic devices is nearly ubiquitous in U.S. homes and schools. However, some research shows that while children and adolescents spend a lot of time on their devices and may be skilled at social networking and texting, they are not necessarily skilled at reading online (Leu et al., 2015) or on electronic devices. Additionally, little is known about writing on electronic devices and whether writing in non-Standard English (e.g., texting) is detrimental to writing skills including handwriting and composition (Purcell, Buchanan, and Friedrich, 2013). More research is needed regarding the skills needed to read on the Internet and on electronic devices, and on potential opportunities or challenges to literacy instruction or achievement created by technology.
- Supporting students in reading and writing in content-area classrooms is increasingly important as students enter secondary school. Two frameworks used to understand these issues are content area literacy and disciplinary literacy, which research and theory suggest are not the same (Shanahan and Shanahan, 2012). The Institute welcomes research on both content area literacy instruction and disciplinary literacy instruction, and how such instruction is associated with improved reading and writing achievement.

Visit our website for more information on this topic and to view the abstracts of previously funded projects. 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. Science, Technology, Engineering, and Mathematics (STEM) Education

Program Officer: Dr. Christina Chhin (202-245-7736; Christina.Chhin@ed.gov)

a) Purpose

The Science, Technology, Engineering, and Mathematics (STEM) Education topic supports research on the improvement of STEM knowledge and skills of students from kindergarten through high school. Research under the STEM Education topic can focus on a single domain within STEM (e.g., mathematics), or can be interdisciplinary by examining two, three, or all four domains of STEM education. The Institute encourages researchers to explore malleable factors (e.g., children's abilities and skills) that are associated with better STEM outcomes, as well as mediators and moderators of the relations between these factors and student outcomes, for the purpose of identifying potential targets of intervention. The Institute also encourages the development and rigorous evaluation of promising interventions to improve STEM learning. In addition, the Institute invites applications to develop and validate new assessments of, as well as applications to validate existing measures of, STEM learning.

The long-term outcome of this research will be an array of tools and strategies (e.g., curricula, programs, assessments) that are documented to be effective for improving or assessing STEM learning and achievement.

b) Requirements

Applications under the STEM topic **must** meet the Sample, Outcomes, and Setting requirements listed below in order to be responsive and sent forward for scientific peer review.

(1) Sample

- Your research **must** focus on students at any level from **kindergarten through high school**.

(2) Outcomes

- Your research **must** include outcome measures focusing on student learning in science, technology, engineering, and/or mathematics.

(3) Setting

- Your research **must** be conducted in authentic K-12 education settings or on data collected from such settings.

c) Gaps in STEM Education Research

While the Institute supports field-generated research that addresses any of its research goals (see Part III Research Goals), the Institute has also identified critical research gaps in the STEM domain (described below) and encourages applications that address these issues. The Institute's scientific 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.

- Since 2002, the Institute has made significant progress in helping to support 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). Research on the other two domains of STEM, technology and engineering education, has been minimal. Thus, more research on technology and engineering education focusing on exploration to development of interventions and assessments to rigorous evaluations is needed.

- There is limited research on how best to foster teaching, learning, and engagement across the STEM disciplines. A recent National Research Council (2014) report suggests that the integration of STEM concepts and practices is promising in terms of improving learning. There are, however, practical challenges to integrating STEM disciplines in teaching and learning, including the fact that many teachers are not trained or prepared to teach across STEM disciplines, and the majority of assessments measure learning in only a single discipline. While it is important to continue to conduct research in domain specific areas of STEM, the Institute encourages new research exploring ways in which an interdisciplinary STEM education can be successfully integrated in grades K-12 and lead to improved student academic outcomes.
- The most recent NAEP results show that White and Asian students continue to outperform Black and Hispanic students in math (2017) and science (2015). Similarly, on the 2014 Technology and Engineering Literacy (TEL) Assessment, White and Asian students outperformed Black and Hispanic students. Although the gender achievement gap in STEM is not as wide as the race/ethnicity achievement gap, there continue to be significant gender differences. On the 2015 NAEP, male students continue to outperform female students in science in Grades 8 and 12, and on the 2017 NAEP, male students outperformed female students in mathematics at Grades 4 and 8. On the 2014 TEL Assessment, female students outperformed male students overall. More research is needed on how to reduce STEM achievement gaps and ensure all students can achieve proficiency in STEM.
- The majority of states have established policies allowing computer science coursework to count towards completion of high school graduation requirements in mathematics or science (Zinth, 2018). Computer science is offered to students in 40 percent of U.S. schools (https://code.org/promote), and 28 states plus the District of Columbia count computer science towards a graduation requirement. Coursework in computer science may provide students with computational literacy, along with increased critical thinking and problem solving skills (Nager and Atkinson, 2016). With the increased attention on computer science, research is needed to develop curricula and instructional practices that are inclusive of all students, develop valid and reliable measures to assess computational thinking, and evaluate the impact of computer science programs and practices on student learning.
- The Maker Movement is gaining traction in K-12 schools as an opportunity for students to engage in STEM practices, particularly design and engineering. “Making” is defined as “activities focused on designing, building, modifying, and/or repurposing material objects, for playful or useful ends, oriented toward making a ‘product’ of some sort that can be used, interacted with, or demonstrated” (Martin, 2015, p. 31). Research on the role and impact of “making” as part of the K-12 education experience is in its infancy. As the Maker Movement gains popularity among educators, rigorous research is needed to explore how the activities can be used to improve STEM learning, along with the development of maker programs that can be feasibly and successfully implemented in K-12 education settings.

Visit our website for more information on this topic and to view the abstracts of previously funded projects. 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. Social and Behavioral Context for Academic Learning

Program Officer: Dr. Emily Doolittle (202-245-7833; Emily.Doolittle@ed.gov)

a) Purpose

The Social and Behavioral Context for Academic Learning (Social/Behavioral) topic supports research on social skills, attitudes, and behaviors (i.e., social and behavioral competencies) to improve student achievement and progress through the education system from kindergarten through high school.

Through this topic, the Institute is interested in understanding ways to support the development of social/behavioral competencies such as social skills (e.g., responsibility, cooperation), learning strategies (e.g., goal-setting, self-regulated learning), dispositions or attitudes (e.g., motivation, academic self-concept), and behaviors (e.g., constructive participation, attendance) that research suggests may help students succeed in school and work.

Research supported through this topic will lead to an array of tools and strategies to improve or assess students' social/behavioral competencies, and teacher practices that support them, in order to improve student academic achievement.

b) Requirements

Applications under the Social/Behavioral topic **must** meet the Sample, Outcomes, and Setting requirements listed below in order to be responsive and sent forward for scientific peer review.

(1) Sample

- Your research **must** focus on students at any level from **kindergarten through high school.**
- Research on professional development interventions **must** be designed to provide **in-service, school system staff** (e.g., teachers, guidance counselors, school psychologists) with supports and skills to improve the social and behavioral context for academic learning.

(2) Outcomes

- Your research **must** include measures of student social and behavioral competencies (i.e., social skills, attitudes, or behaviors) and student academic outcomes.
- For research on professional development interventions, you **must** include measures of the in-service, school system staff knowledge, skills, beliefs, behaviors, and/or practices that are the focus of your research.
    - Research on teacher preparation (pre-service training and experience) is restricted to the Exploration, Development and Innovation, and Measurement goals. Teacher preparation research submitted under the Efficacy and Follow-up or Replication: Efficacy and Effectiveness goals will be considered nonresponsive and will not be sent forward for scientific peer review.[14]

[14] The reason for this restriction is that there is not enough time for researchers to measure the effects of an intervention on teachers *and* student outcomes within the maximum duration of an Efficacy and Follow-up or Replication: Efficacy and Effectiveness award.

(3) Setting

- Your research **must** be conducted in authentic K-12 education settings or on data collected from such settings.

c) Gaps in Social/Behavioral Research

While the Institute supports field-generated research that addresses any of its research goals (see Part III Goal Requirements), the Institute has also identified critical research gaps in the Social/Behavioral domain (described below) and encourages applications that address these issues. The Institute's scientific 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.

- As the name of this topic implies, social skills and behavior are a means to improving academic achievement. But what if the direction of effects went the other way? For example, a recent meta-analysis indicates that academic interventions can have a positive impact on behavior (Warmbold-Brann et al., 2017). Others have advocated for a full integration of social and emotional learning (SEL) into the more traditional academic focus of schools (e.g., the National Commission for Social, Emotional, and Academic Development; the Collaborative for Academic, Social, and Emotional Learning). What might this look like? The Institute welcomes applications that consider new theories of change to advance our understanding of social and behavioral competencies and how they relate to success in school. The need to consider other intervention models is all the more important given the equivocal evidence base for school-based SEL interventions (Hurd and Deutsch, 2017; Jones et al., 2017; McClelland et al., 2017; Yeager, 2017).
- Policy changes at the state (http://www.casel.org/state-scan-scorecard-project) and federal level (Every Student Succeeds Act, 2015) have spurred great interest in ways to measure social and behavioral competencies in schools. Many such measures exist, but they tend to be more appropriate for research purposes than for applied purposes like program evaluation, accountability, or tracking student progress (Duckworth and Yeager, 2015; McKown, 2017). The field could benefit from research to develop and validate measures of social skills, attitudes, and behaviors for these more applied purposes in schools.
- A GAO analysis of the 2013-14 U.S. Department of Education Civil Rights Data Collection finds that Black students, boys, and students with disabilities were disproportionately disciplined in K-12 public schools. The precise causes of these disparities are not known, although recent studies suggest that educators' implicit biases (Gilliam et al., 2016) or social-behavioral competencies (Gregory and Fergus, 2017) may play a role. Other research indicates that students' prior problem behavior may be a factor (Wright et al., 2014). Additional research is needed to learn more about the potential causes of disparate discipline practices in schools and to develop new approaches to discipline that support teaching and learning for all students.

Visit our website for more information on this topic and to view the abstracts of previously funded projects. Please contact the Program Officer for this topic to discuss your choice of topic and goal and to address other questions you may have.

13. Special Topics in Education Research

The Institute has identified special topics to encourage research in understudied areas that are not attracting applications under one of the standing topics. For FY 2019, the Institute invites applications to two new special topics: Foreign Language Education and Social Studies. Each special topic has a dedicated Program Officer(s) who can answer questions and help you determine if the special topic is appropriate for your application. The Institute will accept applications to the two special topics under all five research goals (see Part III).

➢ *Foreign Language Education*

Program Officers: Dr. Molly Faulkner-Bond (202-245-6890; Molly.Faulkner-Bond@ed.gov)
Dr. Rebecca Kang McGill-Wilkinson (202-245-7613; Rebecca.McGill@ed.gov)

a) Purpose

The Institute is interested in research that examines how best to support English-speaking students who are learning a foreign language in school and how proficiency in two or more languages is linked to student education outcomes.[15] Nationwide, at least 10.5 million students (approximately 1 in 5) are learning a foreign language in United States schools (American Councils for International Education, American Council on the Teaching of Foreign Languages, Center for Applied Linguistics, and Modern Language Association, 2017). Several recent national reports and government efforts have pointed to the critical need for U.S. citizens to be proficient in more than one language as a matter of diplomacy, economic competitiveness, global and cultural competence, and national security (Commission on Language Learning, 2017). The Every Student Succeeds Act (2015) includes foreign languages in its definition of a well-rounded education (section 8101 [52]), and authorizes state and local education agencies to use federal funds for foreign language education through Title IV - 21st Century Schools. Additionally, the Defense Language and National Security Education Office (DLNSEO), part of the Department of Defense, has indicated that foreign language education is important for national security (Council on Foreign Relations, 2017).

Learning an additional language may have value in itself, and may also support achievement in other academic content areas. For example, researchers have shown that English-speaking students enrolled in foreign language programs perform as well as, or better than, similar students instructed only in English on academic content assessments in English (Steele, et al., 2017; Taylor and Lafayette, 2010). The Institute is interested in research including but not limited to:

- Exploration of the relationship between foreign language learning and other academic outcomes (e.g., reading or math), cognitive functions (e.g., cognitive flexibility), or social and behavioral competencies (e.g., cultural competency, empathy, or self-efficacy).
- Development and testing of interventions to support teaching and learning of and in foreign languages, including instructional materials, curricula, and professional development for use in bilingual and dual-language immersion (DLI) programs.

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[15] We use the term "foreign language" throughout this topic to mean languages other than English. Other education agencies may refer to these as "world languages" or "global languages." We also acknowledge that many students in the United States speak languages other than English as their first or home language, and thus these languages may not be considered foreign for those students.

- Development and validation of assessments of foreign language proficiency, multilingualism, and other aspects of foreign language learning and instruction.
- Evaluation studies of foreign language learning programs and policies (including DLI), especially as they impact academic outcomes such as reading, writing, and STEM.

b) Requirements

Applications under the Foreign Language Education topic **must** meet the Sample, Outcomes, and Setting requirements listed below in order to be responsive and sent forward for scientific peer review.

Sample

- Your research **must** focus on students at any level from **kindergarten through high school**.
- The student sample **must** focus on students who are proficient in English.
- The sample may include English learners if these students are also enrolled in or targeted by the intervention being studied. Projects that focus primarily on ELs, however, should be submitted to the English Learners topic.
- If applicable, the teacher sample **must** include teachers who *teach* the target foreign language(s) or *teach in* the target foreign language(s).

Outcomes

- Your research **must** include student academic outcomes, including a measure of proficiency in the target foreign language.
- Your research may also include measures of cognitive processes (e.g., memory, attention), or student social and behavioral competencies (i.e., social skills, attitudes, or behaviors).
- If your research focuses on teachers (e.g., language instructors, or teachers in dual language or bilingual programs) you **must** include measures of their knowledge, skills, beliefs, behaviors, and/or practices that are the focus of your research in addition to the required measures of student education outcomes.

Setting

- Your research **must** be conducted in authentic K-12 education settings, or on data collected from such settings.

➢ *Social Studies*

Program Officer: Dr. Edward Metz (202-245-7455; Edward.Metz@ed.gov)

a) Purpose

Social studies education is intended to prepare students with the knowledge, skills, and attitudes to understand complex social and economic issues. Recently, the Every Student Succeeds Act (2015) expanded the curricular focus of U.S. education to encourage states to include social studies and its core disciplines of civics, geography, economics, and history as part of 17 subjects that make up a well-rounded education. Such an expansion will have to address the current level of student knowledge in social studies. For example, the 2014 NAEP found that only 18 percent of eighth graders performed at or above Proficient in U.S. History, 27 percent performed at or above Proficient in Geography, and 23 percent

performed at or above Proficient in Civics. Students from lower-income and minority backgrounds performed lower than those in other groups.

Through this special topic, the Institute seeks to strengthen the research base for teaching and learning social studies and its core disciplines. The Institute is interested a wide range of research including but not limited to:

- Exploration of the relationship between social studies and civic skills, attitudes, and participation, particularly for students from low-income and minority backgrounds (e.g., Kawashima-Ginsberg, 2013).
- Exploration of the relationship between social studies and core academic content (e.g., STEM, reading, writing) and social and behavioral competencies, such as socio-emotional development and interpersonal skills (e.g., Swanson et al., 2016; Lawless et al., 2015).
- Development and testing of social studies interventions that actively engage students through forms of experiential and collaborative activities, such as through roleplaying, debates, inquiry and investigation, real-world problem solving, and service learning (e.g., Dack et al., 2016; Furco, 2013).
- Development and testing of interventions designed to support students in becoming digitally literate citizens in the 21st century, including those which integrate new forms of technology within social studies programs, such as social media, multi-user virtual environments, virtual and augmented reality, and wearables (e.g., Curry and Cherner, 2016).
- Studies of the efficacy or effectiveness of state and district policies designed to engage students in disciplinary and cross-disciplinary social studies programs (e.g., Campbell and Niemi, 2017).
- Validation of existing and development and validation of new assessment tools for use in social studies programs (e.g., Sklarwitz, 2017).

b) Requirements

Applications under the Social Studies topic **must** meet the Sample, Outcomes, and Setting requirements listed below in order to be responsive and sent forward for scientific peer review.

Sample

- Your research **must** focus on students at any level from **kindergarten through high school.**

Outcomes

- Your research **must** include measures of student academic outcomes. At least one academic outcome should be in social studies (e.g., an assessment of student learning in history, civics, or geography).
- Your research may also include measures of student social and behavioral competencies (i.e., social skills, attitudes, or behaviors).
- If your research focuses on teachers you **must** include measures of their knowledge, skills, beliefs, behaviors, and/or practices that are the focus of your research in addition to the required measures of student education outcomes.

Setting

- The research **must** be conducted in authentic K-12 education settings or on data collected from such settings.

PART III: RESEARCH GOALS

A. APPLYING UNDER A GOAL

For the FY 2019 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 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).
The research goals are designed to span the range from basic research with practical implications to applied research (the latter includes the development of education interventions and assessments and the evaluation of the impact of interventions when implemented under 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).

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.**
- In order 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 that relationship. Exploration projects are intended to build and inform theoretical foundations to support future applied research efforts such as (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 will result in a conceptual framework that identifies the following:

- A relationship between a malleable factor and a student education outcome;
- 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.

Malleable factors

Things that can be changed by the education system to improve student education outcomes.

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 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 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 scientific peer review, applications under the Exploration goal **must** describe

(i) The factors to be studied.

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

Project Aims:

- Describe how the factors are malleable and under the control of the education system, the relationships you expect them to have with specific 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 for the malleable factors that may be associated with beneficial student education outcomes or for the mediators and moderators that 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 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 and Follow-up or Replication: Efficacy and Effectiveness 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, 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 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.

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.

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.

Requirements: In order to be responsive and sent forward for scientific 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.), 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 and secondary data projects
    - Describe the base population, the sample, and the sampling procedures (including justification for any exclusion and inclusion criteria).
    - 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 data sets, provide sufficient detail for reviewers to be able to judge the feasibility of the linking plan.
- For meta-analysis projects
    - Describe and justify the criteria for including or excluding studies.
    - Describe the search procedures for ensuring that a high proportion of eligible studies (both published and unpublished) will be located and retrieved.
    - 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.
    - Demonstrate that sufficient numbers of studies are available to support the meta-analysis and that the relevant information is reported frequently enough and in a form that allows an adequate data set to be constructed.

Measures:

- 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.
    - If the data will be transformed to create any of the key variables, describe this process.
- For primary data collection
    - Describe the data to be collected and the procedures for data collection.
    - If the data will be transformed to create any of the key variables, describe this process.
    - 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
    - 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).
    - 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 scientific 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.

- Describe personnel at the primary applicant institution and any subaward institutions along with any consultants.
- Identify and briefly describe the following for all key personnel (e.g., Principal Investigator, co-Principal Investigators, co-Investigators) on the project team:
    - Qualifications to carry out the proposed work.
    - Roles and responsibilities within the project.
    - Percent of time and calendar months per year (academic plus summer) to be devoted to the project.
    - 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, you should include a plan describing how their involvement will not jeopardize 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 coordinated or integrated tasks.
- 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 how you have both the institutional capacity to complete a project of this size and complexity and 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 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 can acquire or has access to 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).
    - Include information about teacher and school incentives, if applicable.
- Describe your access to any data sets 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 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 (Development and Innovation) 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 Institute will not accept applications under Development and Innovation that propose only minor development activities and are mainly focused on testing the intervention's impacts. Instead, if you have an intervention that is ready to be tested for efficacy, you should apply to the Efficacy and Follow-up goal 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 theory of change for the intervention.
- Data that demonstrates 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 or revise this intervention.

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

(i) The new or existing intervention that will be developed or revised; and

(ii) A rationale for the proposed work.

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. Clearly compare your intervention to existing interventions currently in use to address this issue, 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 1) it is sufficiently different from current practice and does not suffer from the same shortcomings; 2) it has key components that can be justified, using theoretical or empirical reasons, as powerful agents for improving the outcomes of interest; and 3) its implementation appears feasible for teachers, other education personnel, and/or 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.

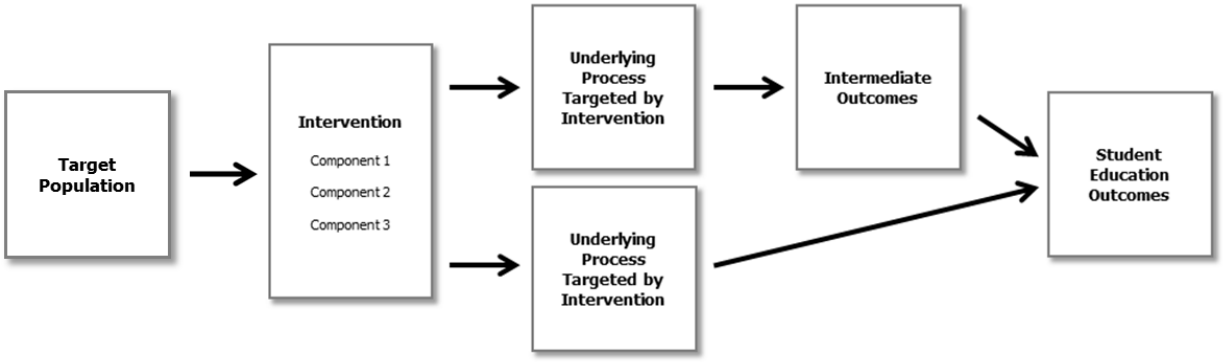

Figure 1. A diagram of a simple theory of change.

- 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.
- For interventions designed to directly affect the teaching and learning environment and, thereby, indirectly affect student education outcomes, be clear in your theory of change to 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.

- If you are applying for a Development and Innovation award to further develop an intervention that was the focus of a previous Institute-funded 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, 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 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 scientific 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 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.

> ***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 and its cost. 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 of further development, testing individual components of the intervention).

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

- 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 and Powell, 2011; Fuchs and 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.

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.

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

Pilot Study:

- Describe the design of the pilot study, the data to be collected, the analyses to be conducted, and 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 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 (i.e., student, classroom, school), and the need to stay within the maximum 35 percent of grant funds that can be used for the pilot study. As a result, pilot studies may use the following designs. This list is meant to be illustrative and not exhaustive, as other designs may be appropriate.
    - Efficacy studies (e.g., fully powered, randomized controlled studies are possible especially when randomization occurs at the student level).
    - Underpowered efficacy studies (e.g., randomized controlled studies with a small number of classrooms or schools that provide unbiased effect size estimates of practical consequence which can stand as evidence of promise while not statistically significant).
    - Single-case studies that meet the design standards for individual single-case studies set by the What Works Clearinghouse (Kratochwill et al., 2010).
    - Quasi-experimental studies based on the use of comparison groups with additional adjustments to address potential differences between groups (e.g., 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 the number of months gained in reading or math skills as 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 will 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 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.

- 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.
- Describe what population of districts, schools, classrooms, and/or students will be captured by your cost analysis.
- The Institute encourages cost-effectiveness analysis for pilot studies with designs that can support such analysis (e.g., fully-powered randomized controlled trials). 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 scientific 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:
    - Qualifications to carry out the proposed work.
    - Roles and responsibilities within the project.
    - Percent of time and calendar months per year (academic plus summer) to be devoted to the project.
    - 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.
- 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 Development and Innovation award and are applying for a grant to develop a new intervention, you should indicate whether the previous intervention has been evaluated for its efficacy (by yourself or another research team).

d. Resources – The purpose of this section is to describe how you have both the institutional capacity to complete a project of this size and complexity and 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 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).
    - Include information about teacher and school incentives, if applicable.
- Describe your access to any data sets 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 the results from your development 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

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.**
    - 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).**
    - 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 (WWC) evidence standards (with or without reservations) (http://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.
    - 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 under Goal Four.
    - 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.
    - 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:

- 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.
- 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.

- Retrospective – 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 (3) 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:
  - 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).

- 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:
  - Identify the target population and where implementation will take place.
  - Identify who the end users of the intervention are and describe how implementation will be carried out by them.
  - Describe the conditions under which the intervention will be implemented. For example:
    - Ideal conditions provide a more controlled setting under which the intervention may be more likely to have beneficial impacts. For example, ideal 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.

> ***End user***
>
> The person intended to be responsible for the implementation of the intervention.

- 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 theory of change 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.
    - 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.
    - 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.

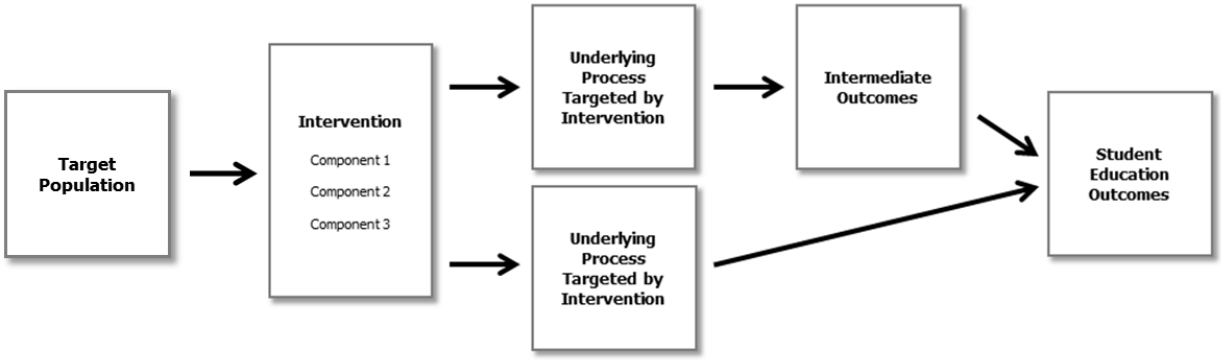

Figure 2. A diagram of a simple theory of change.

- 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:
    - 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.

- 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, promise for achieving its intended outcomes, and cost to implement (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.
- 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 scientific 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 for:

(i) A cost analysis; and

(ii) 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.

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:
    - 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).
    - 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 (http://www.consort-statement.org/consort-statement/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.
    - 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 your research design:
    - 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.

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:
  - 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 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.
- Detail how you will ensure that the study will meet 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 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).[16]

Power Analysis:

- 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 (e.g., students in classrooms and/or schools) 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:
    - The statistical formula you used;
    - The parameters with known values used in the formula (e.g., number of clusters, number of participants within the clusters);
    - The parameters whose values are estimated and how those estimates were made (e.g., intraclass correlations, role of covariates);
    - Other aspects of the design and how they may affect power (e.g., stratified sampling/blocking, repeated observations); and
    - 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.

Include power analyses for all proposed causal analyses, including subgroup analyses.

Include enough information so that reviewers can duplicate your power.

[16] See the WWC's Standards Handbook, Version 4.0 at https://ies.ed.gov/ncee/wwc/Handbooks.

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 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 and graduation).
- For interventions designed to directly change the teaching and learning environment and, in doing so, affect student outcomes, 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 a study 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 improvements in design, use, and support; targeting or scaling the intervention; and 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.
    - Identify the characteristics that may affect implementation that you will examine and your rationale for choosing them.
    - Identify your measures of these characteristics.
    - Describe how you will examine the influence of these characteristics on implementation (e.g., how

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.

they inhibit or support implementation).

- Describe how you will identify end user adaptations of the program or policy, and examine what local contexts have led to them and whether they may be correlated with student education outcomes.

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.[17] 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 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.
  - 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.

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.

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

- 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.
- 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 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.
  - 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,
  - To examine how different levels of fidelity are related to the intervention's impacts.
  - To identify what level of overall fidelity or levels of fidelity for core components are associated with beneficial impacts.
- For Follow-up studies of students, information on fidelity of implementation is not required as students in these studies do not continue to receive 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.
  - 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 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 data sets, provide sufficient detail for reviewers to judge the feasibility of the linking plan.

Moderators and Mediators:

- While not required, the analysis of 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, districts, and states understand both total and per student 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 total 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.
    - Describe what population of districts, schools, classrooms, and/or students will be captured by your cost analysis.

- 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.
  - 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.
  - Describe the cost-effectiveness method you intend to use.
  - 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:
  - 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 analysis, implementation analyses, moderator and/or mediator analyses, cost analysis, and dissemination.
- Indicate procedures to guard against bias entering into the data collection process (e.g., pretests occurring after the intervention has been implemented or differential timing of assessments for treatment and control groups).
- 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 allowed only 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 scientific peer review, applications under the Efficacy and Follow-Up 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 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.
    - Roles and responsibilities within the project.
    - Qualifications to carry out the proposed work.
    - Percent of time and calendar months per year (academic plus summer) to be devoted to the project.
    - 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 how you have both the institutional capacity to complete a project of this size and complexity and 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 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 Efficacy and Follow-up 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).
    - Include information about student, teacher, and school incentives, if applicable.
- Describe your access to any data sets 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 the 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) 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).**

- 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).**

(3) 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 registering the study and making the final research data accessible to others. **Applications that do not contain a DMP 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., see the SREE Registry of Efficacy and Effectiveness Studies https://www.sree.org/pages/registry.php).
- 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).

4. Replication: Efficacy and Effectiveness (Goal Four)

a) Purpose

The purpose of Replication: Efficacy and Effectiveness (Goal Four) 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:
    - Researchers may propose to study the impacts of a previously-evaluated intervention with a different population 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).

- 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 (WWC) 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 (3) 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[18] 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 conditions provide a more controlled setting under which the intervention may be more likely to have beneficial impacts. For example, ideal conditions could include more implementation support than would

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

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 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 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 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.

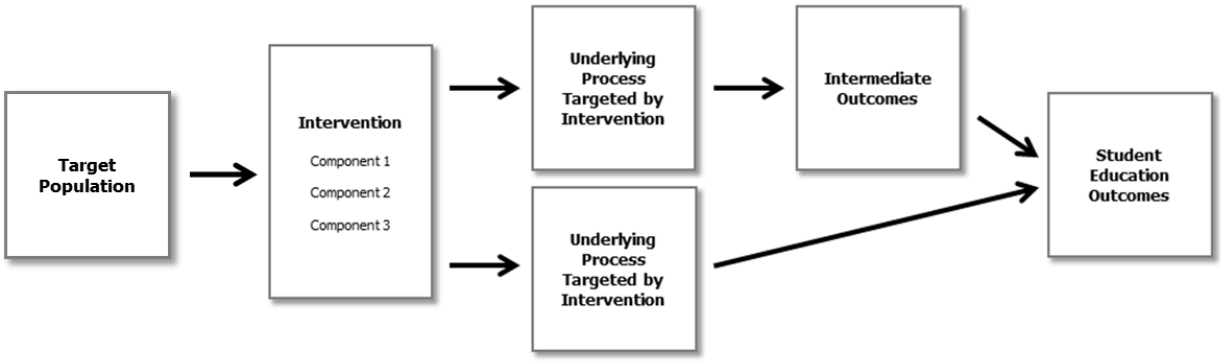

Figure 3. A diagram of a simple theory of change.

- 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.
- 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 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.
- For a Re-analysis Study relying on secondary analysis of existing data, explain the importance of re-analyzing data from a previous evaluation.
  - Discuss why a re-analysis study would be relevant compared to another type of replication.
  - 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.

Dissemination Plan:

- 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 Replication 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, **all** 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.

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.
    - 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.
    - 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:
  - 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 cutoff 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 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.

- Discuss how your study, if well implemented, will meet WWC evidence standards (with or without reservations).[19]

Power Analysis:

- 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 (e.g., students in classrooms and/or schools) 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:
    - The statistical formula you used;
    - The parameters with known values used in the formula (e.g., number of clusters, number of participants within the clusters);
    - The parameters whose values are estimated and how those estimates were made (e.g., intraclass correlations, role of covariates);
    - Other aspects of the design and how they may affect power (e.g., stratified sampling/blocking, repeated observations); and
    - 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.

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 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 and graduation).

[19] See the WWC's Standards Handbook, Version 4.0 at https://ies.ed.gov/ncee/wwc/Handbooks.

- For interventions designed to directly change the teaching and learning environment and, in doing so, affect student outcomes, 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 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 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.

- For Efficacy Replication and Effectiveness Studies:
    - Identify the characteristics that may affect implementation that you will examine and your rationale for choosing them.
    - Identify your measures of these characteristics.
    - Describe how you will examine the influence of these characteristics on implementation (e.g., how they inhibit or support implementation).
    - Describe how you will identify end user adaptations of the program or policy, and examine what local contexts have led to them and whether they may be correlated with student education outcomes.

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 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.[20] 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.
    - 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.
- 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.
    - 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.
- 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.
    - For evaluations conducted under ideal 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.

[20] 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 impact analysis, for example,
  - To examine how different levels of fidelity are related to the intervention's impacts.
  - 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 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 data sets, 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 both total and per student 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 total 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.
    - Describe what population of districts, schools, classrooms, and/or students will be captured by your cost analysis.
    - 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.
    - 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.
    - Describe the cost effectiveness method you intend to use.
    - 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:
    - 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 analysis, implementation analyses, moderator and/or mediator analyses, cost analysis, and dissemination.
- Indicate procedures to guard against bias entering into the data collection process (e.g., pretests occurring after the intervention has been implemented or differential timing of assessments for treatment and control groups).
- 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.

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 scientific 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:
    - Roles and responsibilities within the project.
    - Qualifications to carry out the proposed work.
    - Percent of time in calendar months per year (academic plus summer) to be devoted to the project.
    - 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:
    - Show that the key personnel who are responsible for the design of the evaluation, the assignment to treatment and comparison groups, and the 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.
    - 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 not 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 how you have both the institutional capacity to complete a project of this size and complexity and 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 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).
    - Include information about student, teacher, and school incentives, if applicable.
- Describe your access to any data sets 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 the results from your evaluation 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

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).**

(3) 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 registering your study and making the final research data accessible to others. **Applications that do not contain a DMP 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., see the SREE Registry of Efficacy and Effectiveness Studies https://www.sree.org/pages/registry.php).
- 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).

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 its 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 either to develop/refine the assessment or 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; and

(ii) A rationale for the assessment.

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 education 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 assessment practices 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).

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 education research and to education practice and education stakeholders (e.g., practitioners, policymakers).

Assessment Framework

- Operational definition(s) of the construct(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.

- 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 validation activities and the assessment framework (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 develop or 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, 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 Measurement goal.

b. Research Plan – The purpose of this section is to describe the methodology you will use to develop or refine the assessment, document its validity, and establish its link to student education outcomes.

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

(i) The methods for developing/refining and/or validating the 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 procedures 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(s) and population(s).
- 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(s), population(s), and context(s).
- 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 scientific 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 implement the proposed research competently.

- Describe personnel at the primary applicant institution and any subaward institutions along with any consultants.
- Identify and briefly describe the following for all key personnel (e.g., Principal Investigator, co-Principal Investigators, co-Investigators) on the project team:
    - Qualifications to carry out the proposed work.
    - Roles and responsibilities within the project.

- Percent of time and calendar months per year (academic plus summer) to be devoted to the project.
- 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 a research team that collectively demonstrates expertise in content domain(s), assessment development and administration, psychometrics, and statistical analysis as appropriate to support your scope of work. In many projects 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 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 institutional capacity and resources to complete a project of this size and complexity successfully.

Requirements: In order to be responsive and sent forward for scientific 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 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).

    - Include information about teacher and school incentives, if applicable.

- Describe your access to any data sets 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 measurement 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

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 Research Goals (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 may not 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 the Office of Management and Budget's (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 application 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 data sets, 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 will 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 data sets* - 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 data sets (such as federally collected data sets, state or district administrative data, or data collected by you or other researchers), you will need to provide documentation that you have access to the necessary data sets in order to receive the grant. This means that

if you do not have permission to use the proposed data sets at the time of application, you must provide documentation to the Institute from the entity controlling the data set(s) before the grant will be awarded. This documentation must indicate that you have permission to use the data for the proposed research for the time period discussed in the application. If you obtained permission to use a proposed data set prior to submitting your application, the Institute will ask you to provide updated documentation indicating that you still have permission to use the data set to conduct the proposed research during the project period.

- *Building on 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 3 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 SCIENTIFIC 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 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 or information 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 scientific 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 Research Goals and in the section describing the relevant research grant topic within Part II Topics.

a) Significance

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

b) Research Plan

Does the applicant meet the methodological requirements 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 duration and budget maximums specified in the Request for Applications, i.e., the proposed research 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 (84-305A2019) 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).[21]

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 Education Research Grants program, you must search on: CFDA 84.305.

The Grants.gov search on CFDA 84.305 will yield more than one Application Package. For the Education Research Grants program, you must download the Application Package marked

- Education Research CFDA 84.305A

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 Education Research 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.

[21] 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.

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 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 right 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.E.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., Reading and Writing, 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 education outcomes for U.S. students.
- **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, 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 methods 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 http://ies.ed.gov/ncer/projects 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.E.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 Part III Research Goals.

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 Part VI.E.4 Research & Related Other Project Information).

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. 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 major publications, presentations, and products you expect to produce.

- Institute-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 Institute-funded Research and Development (R&D) Centers, Research Networks, or Regional Educational Laboratories (RELs)
    - R&D Centers: https://ies.ed.gov/ncer/RandD/;
    - Research Network: https://ies.ed.gov/ncer/research/researchNetworks.asp;
    - RELs: https://ies.ed.gov/ncee/edlabs/.
- Institute-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, the Institute encourages researchers to consider how these products could be brought to market to increase their dissemination and use.
- Institute-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.
  - 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.
  - 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. As noted below, the cost of activities need to be measured to the extent possible and communicating the cost/effectiveness of interventions must be part of dissemination work.
  - 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. As with Development and Innovation projects, the costs of interventions

need to be measured and communicating the cost-effectiveness of interventions must be part of dissemination work.

- 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 impact 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.

- 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.

The Dissemination Plan is the only information that should be included in Appendix A.

4. Appendix B: Response to Reviewers (Required for Resubmissions Only)

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.E.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.E.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 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.E.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.E.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. Although, see Part VI.D.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 3 and 4 Only)

a) Submission

If you are applying under Efficacy and Follow-up or Replication: Efficacy and Effectiveness, 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.E.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 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.E.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.E.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.E.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 (i.e., 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.E.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 sketch will be submitted as a separate PDF attachment and attached to the Research & Related Senior/Key Person Profile (Expanded) form (see Part VI.E.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 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.E.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 that has been extracted and attached using the R&R Subaward Budget (Fed/Non-Fed) Attachment(s) Form (see Part VI.E.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 4:30:00 p.m. Eastern Time on August 23, 2018) and accepted by the Institute. Any questions that you have about submitting your application through Grants.gov should be addressed to the Grants.gov Contact Center at support@grants.gov or call 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 p.m. Eastern Time on August 23, 2018. **Applications received by Grants.gov after the 4:30:00 p.m. 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.

- Click the Register link https://www.grants.gov/web/grants/register.html in the top-right corner of the Grants.gov banner.
- Click the **Get Registered Now** button on the Register page.
- 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.
- 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.
- 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 process 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 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. Eastern 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

http://www.grants.gov/web/grants/support/general-support/faqs.html

- Grants.gov Adobe Reader FAQs

http://www.grants.gov/web/grants/support/general-support/faqs/adobe-reader-faqs.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 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., 305A), the fiscal year for the submission (e.g., 19 for fiscal year 2019), and finally four digits unique to the application, for example R305A19XXXX. 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 deadline 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 Customer 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.

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.

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 IV.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 application 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 (84-305A2019). Please note that fields marked by an asterisk, 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 b (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 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 drop-down 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 is used by the Institute to screen applications for responsiveness to the competition requirements and assignment to the appropriate scientific peer review panel. **Complete this 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). E**nter the**

PR/Award number that was assigned to the prior submission (e.g., R305A18XXXX) 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 Education Research (CFDA 84.305A) program must be submitted to a particular topic and goal (see Part II Topics and Part III Research Goals for additional information).

Topics	Codes
Career and Technical Education	NCER-CTE
Cognition and Student Learning	NCER-CASL
Early Learning Programs and Policies	NCER-ELPP
Education Leadership	NCER-Lead
Education Technology	NCER-EdTech
Effective Teachers and Effective Teaching	NCER-Teach
English Learners	NCER-EL
Improving Education Systems	NCER-SYS
Postsecondary and Adult Education	NCER-PostsecAdult
Reading and Writing	NCER-RW
Science, Technology, Engineering, and Mathematics (STEM) Education	NCER-STEM
Social and Behavioral Context for Academic Learning	NCER-SocBeh
Foreign Language Education	NCER-ForeignLang
Social Studies	NCER-SocStudies
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 an Exploration project under the Effective Teachers and Effective Teaching topic, enter the codes "NCER-Teach" and "Exploration."

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 codes 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.

- 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) to ensure that the corrected application is reviewed.

- 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 Topics or the list of Program Officers in Part VI.I) 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 Research Goals).

- 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 https://www.grants.gov/web/grants/applicants/applicant-faqs.html#forms. 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 Research Goals).
- 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:

  - To the statements contained in the list of certifications
  - 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.E.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.E.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 Representative. The Authorized 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 Representative including name, title, organizational affiliation (e.g., organization, department, division, etc.), address, telephone and fax numbers, and email address of the Authorized Representative. Use the drop down menus where they are provided.

  Signature of Authorized 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 IV.D.10 Biographical Sketches of Senior/Key Personnel for information on page length and format recommendations, 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.9 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.9 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), 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 authentic education 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.E.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.E.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.E.6 for instructions regarding budgets for a subaward).

- Budget Period Information.

  Enter the start date and the end date for each budget period. **Enter no more than 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 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 he/she 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.E.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 US 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 (%). 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, 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."

- I. 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: 5 years	$4,000,000
	Re-analysis: 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.E.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.E.1	Form provided in Grants.gov application package
Senior/Key Person Profile (Expanded)	Part VI.E.2	Form provided in Grants.gov application package
Project/Performance Site Location(s)	Part VI.E.3	Form provided in Grants.gov application package
Other Project Information	Part VI.E.4	Form provided in Grants.gov application package
Budget (Total Federal + Non-Federal):	Part VI.E.5	Form provided in Grants.gov application package
R&R Subaward Budget (Fed/Non-Fed) Attachment(s) Form (if applicable)	Part VI.E.6	Form provided in Grants.gov application package to *extract and attach* subaward budget(s).
SF 424B Assurances – Non-Construction Programs Grants.gov Lobbying form Disclosure of Lobbying Activities – Standard Form LLL (if applicable)	Part VI.E.7	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.E.1?
	For item 4b, are the correct topic and goal codes included following the instructions in Part VI.E.1?
	For item 8, is the Type of Application appropriately marked as either “New” or “Resubmission” following the instructions in Part VI.E.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 and 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 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 & Cost Maximums for the Research Goal.
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 cause errors.
	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.

Career and Technical Education
Dr. Corinne Alfeld
Email: Corinne.Alfeld@ed.gov
Telephone: 202-245-8203

Cognition and Student Learning
Dr. Erin Higgins
Email: Erin.Higgins@ed.gov
Telephone: 202-706-8509

Early Learning Programs and Policies
Dr. Caroline Ebanks
Email: Caroline.Ebanks@ed.gov
Telephone: 202-245-8320

Education Leadership
Dr. Katina Stapleton
Email: Katina.Stapleton@ed.gov
Telephone: 202-245-6566

Education Technology
Dr. Edward Metz
Email: Edward.Metz@ed.gov
Telephone: 202-245-7550

Effective Teachers and Effective Teaching
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Telephone: 202-245-8198

English Learners
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Email: Molly.Faulkner-Bond@ed.gov
Telephone: 202-245-6890

Improving Education Systems
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Email: Corinne.Alfeld@ed.gov
Telephone: 202-245-8203

Postsecondary and Adult Education

Dr. James Benson
Email: James.Benson@ed.gov
Telephone: 202-245-8333

Dr. Meredith Larson
Email: Meredith.Larson@ed.gov
Telephone: 202-245-7037

Reading and Writing

Dr. Rebecca Kang McGill-Wilkinson
Email: Rebecca.McGill@ed.gov
Telephone: 202-245-7613

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

Dr. Christina Chhin
Email: Christina.Chhin@ed.gov
Telephone: 202-245-7736

Social and Behavioral Context for Academic Learning

Dr. Emily Doolittle
Email: Emily.Doolittle@ed.gov
Telephone: (202) 245-7833

Special Topics

Foreign Language Education

Dr. Molly Faulkner-Bond
Email: Molly.Faulkner-Bond@ed.gov
Telephone: 202-245-6890

Dr. Rebecca Kang McGill-Wilkinson
Email: Rebecca.McGill@ed.gov
Telephone: 202-245-7613

Social Studies

Dr. Edward Metz
Email: Edward.Metz@ed.gov
Telephone: 202-245-7550

Note: Applicants to the FY 2017 and FY 2018 special topics that are no longer accepting applications should contact Katina Stapleton (Katina.Stapleton@ed.gov) for Systemic Approaches to Educating Highly Mobile Students or Erin Higgins (Erin.Higgins@ed.gov) and/or James Benson (James.Benson@ed.gov) for Arts in Education to determine the most appropriate topic to resubmit applications.

GLOSSARY

Assessment: "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).

Assessment framework: 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.

Authentic education setting: 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.

The Institute defines authentic education settings by education level:

- Authentic PreK Education Settings
    - Center-based prekindergarten programs for 3 to 5 year old children
        - Public prekindergarten programs
        - Child care centers (i.e., day care centers, private child care centers, preschools, and nursery schools)
        - Head Start programs
- Authentic K-12 Education Settings
    - Schools and alternative school settings (e.g., alternative schools or juvenile justice settings)
    - School systems (e.g., local education agencies or state 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 (2015) http://www2.ed.gov/policy/elsec/leg/esea02/index.html)
    - Career and Technical Education Centers affiliated with schools or school systems
- Authentic Postsecondary Education Settings
    - 2-year and 4-year colleges and universities that have education programs leading to occupational certificates or associate's or bachelor's degrees
    - Career and Technical Education Centers that lead to occupational certificates or associate's or bachelor's degrees
- Authentic Adult Education Settings
    - Settings where eligible participants receive one or more of the following services from eligible providers (e.g., state and local education agencies, community-based

organizations, institutions of higher education, public or non-profit agencies, libraries) (see Title II of the Workforce Innovation and Opportunity Act (WIOA) for clarification of eligibility https://www.gpo.gov/fdsys/pkg/PLAW-113publ128/pdf/PLAW-113publ128.pdf):

- Adult Basic Education (ABE)
- Adult civics education (e.g., Integrated English Literacy and Civics Education programs)
- Adult English language acquisition programs
- Adult Secondary Education (ASE)
- Family literacy programs (e.g., programs that help improve both parents' and children's academic outcomes)
- Integrated education and training (e.g., programs that provide adult education services concurrent with training in a specific occupation).
- Workplace adult education and literacy programs (e.g., employer-sponsored or hosted adult education and literacy services that don't necessarily train in a particular occupation)

Center-based prekindergarten settings: Center-based prekindergarten settings are defined as public PreK programs, preschools, child care centers, nursery schools, and Head Start programs.

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).

Concurrent validity evidence: Evidence that indicates how accurately scores can predict criterion scores that are obtained at a similar time. A form of validity evidence based on relations to other variables.

Convergent validity evidence: "Evidence based on the relationship between test scores and other measures of the same or related construct" (AERA, 2014).). A form of validity evidence based on relations to other variables.

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).

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). A form of validity evidence based on relations to other variables.

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.

Effectiveness follow-up study: Studies that follow students who took part in an Effectiveness study as they enter later grades (or different authentic education settings) in which they do not continue to receive the intervention in order to determine if the beneficial effects are maintained in succeeding time periods.

Efficacy Replications: An additional study of an intervention that has been shown to have beneficial impacts on student education outcomes in a previous efficacy study, and which is designed to generate additional evidence that the intervention improves student education outcomes.

Employment and Earnings Outcomes: Long-term, post-school student outcomes that include indicators such as hours of employment, job stability, wages and benefits.

End user: The person intended to be responsible for the implementation of the intervention. Efficacy and Follow-up studies and Replication: Efficacy and Effectiveness studies should test an intervention implemented by the end user. For Effectiveness studies the end user can receive routine implementation support from the provider.

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).

Foster Care: 24-hour substitute care for children and youth outside their own homes.

Foster Care Settings: Settings in which foster care is provided, including but not limited to nonrelative foster family homes, relative foster homes (whether payments are being made or not), group homes, emergency shelters, residential facilities, and pre-adoptive homes.

Gateway Courses: Introductory, credit-bearing courses that students must pass in order to complete their college's general education requirements or move on to higher-level coursework in their major.

Homeless Students: Children and youth who lack a fixed, regular, and adequate nighttime residence, include the following:

- Children and youth who are sharing the housing of other persons due to loss of housing, economic hardship, or a similar reason; are living in motels, hotels, trailer parks, or camping grounds due to the lack of alternative adequate accommodations; are living in emergency or transitional shelters; are abandoned in hospitals; or are awaiting foster care placement;
- Children and youth who have a primary nighttime residence that is a public or private place not designed for or ordinarily used as a regular sleeping accommodation for human beings;
- Children and youth who are living in cars, parks, public spaces, abandoned buildings, substandard housing, bus or train stations, or similar settings; and
- Migratory children and youth.

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 an 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 student education outcomes occurs (e.g., many interventions aimed at changing individual student education outcomes work through changing teacher behavior, student peer behavior, and/or student behavior).

Migratory Students: Children and youth who are migratory agricultural workers or fishers or who move with a parent or guardian who is a migratory agricultural worker or fisher.

Military-Dependent Students: Children and youth who are dependents of members of the (1) Armed Forces; (2) civilian employees of the Department of Defense; or (3) personnel who are not members of the Armed Forces or civilian employees of the Department of Defense but who are employed on federal property.

Moderators: Factors that affect the strength or the direction of the relationship between the intervention and student education outcomes (e.g., an intervention's impacts may differ by such student characteristics as achievement level, motivation, or social-economic status; and by organizational or contextual factors, such as school size or neighborhood characteristics).

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). A form of validity evidence based on relations to other variables.

Reliability: The stability or dependability of measures when taken over repeated applications.

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: An efficacy study that analyzes retrospective (historical) secondary data to test an intervention implemented in the past, or re-analyzes secondary data to verify findings from a previous efficacy or replication study, and, that as a result, may not be able meet the requirements for Efficacy or Replication – Efficacy and Effectiveness projects regarding fidelity of implementation of the intervention and comparison group practice.

Routine conditions: Conditions under which an intervention is implemented that reflect (1) the everyday practice occurring in classrooms, schools, and districts; (2) the heterogeneity of the target population; and (3) typical or standard implementation support.

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 three types of student education outcomes. The topic you choose will determine the types of student education outcomes you can study.

- Student academic outcomes:
    - Learning and achievement in core academic content areas (e.g., measures of understanding and achievement in reading, writing, STEM).
    - 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 are important to students' academic and post-academic success.
- Employment and earnings outcomes:
    - 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).

Unaccompanied Youth: A youth not in the physical custody of a parent or guardian, including youth who are residing with a caregiver who does not have legal guardianship and youth who are living on their own.

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 a measure provides a true indication of whatever it is intended to represent.

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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