



REQUEST FOR APPLICATIONS

EDUCATION RESEARCH AND DEVELOPMENT CENTER PROGRAM

CFDA Number: 84.305C

Milestone	Date	Website
<i>Letter of Intent Due</i>	July 18, 2017	https://iesreview.ed.gov/
<i>Application Package Available</i>	July 18, 2017	http://www.grants.gov/
<i>Application Due</i>	By 4:30:00pm Washington DC time on September 21, 2017	http://www.grants.gov/
<i>Applicants Notified</i>	By July 1, 2018	https://iesreview.ed.gov/
<i>Possible Start Dates</i>	July 1, 2018 to September 1, 2018	

IES 2017

U.S. Department of Education

Table of Contents

PART I: OVERVIEW AND GENERAL REQUIREMENTS	1
A. INTRODUCTION	1
1. Technical Assistance for Applicants	2
B. GENERAL REQUIREMENTS	2
1. Student Education Outcomes	2
2. Authentic Education Settings	3
C. APPLICANT REQUIREMENTS	3
1. Eligible Applicants	3
2. The Principal Investigator and Authorized Organization Representative	3
3. Common Applicant Questions	4
D. PRE-AWARD REQUIREMENTS	4
E. READING THE REQUEST FOR APPLICATIONS	5
1. Requirements	5
2. Recommendations for a Strong Application	5
PART II: R&D CENTER REQUIREMENTS	6
A. GENERAL REQUIREMENTS FOR ALL R&D CENTER APPLICATIONS	6
1. Requirements for the Focused Program of Research	6
2. Requirements for Other Center Activities	6
3. Management and Institutional Resources	7
4. Personnel	7
5. Dissemination	7
PART III: R&D CENTER TOPIC REQUIREMENTS	9
A. APPLYING TO AN R&D CENTER TOPIC	9
1. Improving Education Outcomes for Disadvantaged Students in Choice Schools	10
2. Improving Rural Education	22
3. Writing in Secondary Schools.....	34
4. Exploring Science Teaching in Elementary School Classrooms	45
PART IV: COMPETITION REGULATIONS AND REVIEW CRITERIA	56
A. FUNDING MECHANISMS AND RESTRICTIONS	56
1. Mechanism of Support.....	56
2. Funding Available.....	56
3. Cooperative Agreements	57
4. Special Considerations for Budget Expenses	57
5. Program Authority.....	57
6. Applicable Regulations.....	57
B. ADDITIONAL AWARD REQUIREMENTS	57
1. Public Availability of Data and Results	57

2. Special Conditions on Grants.....	58
3. Demonstrating Access to Data and Authentic Education Settings.....	58
C. OVERVIEW OF APPLICATION AND SCIENTIFIC PEER REVIEW PROCESS	59
1. Submitting a Letter of Intent	59
2. Resubmissions and Multiple Submissions	59
3. Application Processing	60
4. Scientific Peer Review Process	60
5. Review Criteria for Scientific Merit.....	61
6. Award Decisions	61
PART V: PREPARING YOUR APPLICATION	62
A. OVERVIEW.....	62
B. GRANT APPLICATION PACKAGE.....	62
1. Date Application Package is Available on Grants.gov	62
2. How to Download the Correct Application Package.....	62
C. GENERAL FORMATTING.....	62
1. Page and Margin Specifications	63
2. Page Numbering	63
3. Spacing	63
4. Type Size (Font Size)	63
5. Graphs, Diagrams, and Tables	63
D. PDF ATTACHMENTS	63
1. Center Summary/Abstract.....	64
2. Center Narrative	64
3. Appendix A: Response to Reviewers (Required for Resubmissions)	65
4. Appendix B: Supplemental Charts, Tables, and Figures (Optional).....	65
5. Appendix C: Examples of Intervention or Assessment Materials (Optional)	65
6. Appendix D: Letters of Agreement (Optional)	66
7. Appendix E: Data Management Plan (Required)	66
8. Bibliography and References Cited	66
9. Research on Human Subjects Narrative	67
10. Biographical Sketches for Senior/Key Personnel	67
11. Narrative Budget Justification	68
PART VI: SUBMITTING YOUR APPLICATION	70
A. MANDATORY ELECTRONIC SUBMISSION OF APPLICATIONS AND DEADLINE.....	70
B. REGISTER ON GRANTS.GOV	70
1. Register Early	70
2. How to Register	71
C. SUBMISSION AND SUBMISSION VERIFICATION.....	72

1. Submit Early	72
2. Verify Submission is OK	72
3. Late Applications.....	73
D. TIPS FOR WORKING WITH GRANTS.GOV	74
1. Working Offline.....	74
2. Connecting to the Internet	74
3. Software Requirements	74
4. Attaching Files	74
5. Workspace	75
E. REQUIRED RESEARCH & RELATED (R&R) FORMS AND OTHER FORMS.....	75
1. Application for Federal Assistance SF 424 (R&R)	75
2. Research & Related Senior/Key Person Profile (Expanded).....	80
3. Project/Performance Site Location(s).....	80
4. Research & Related Other Project Information.....	81
5. Research & Related Budget (Total Federal+Non-Federal)-Sections A & B; C, D, & E; F-K.....	83
6. R&R Subaward Budget (Fed/Non-Fed) Attachment(s) Form.....	88
7. Other Forms Included in the Application Package.....	89
F. SUMMARY OF REQUIRED APPLICATION CONTENT	90
G. APPLICATION CHECKLIST	91
H. PROGRAM OFFICER CONTACT INFORMATION.....	92
GLOSSARY	i
REFERENCES	vi
ALLOWABLE EXCEPTIONS TO ELECTRONIC SUBMISSIONS	xv

PART I: OVERVIEW AND GENERAL REQUIREMENTS

A. INTRODUCTION

In this announcement, the Institute of Education Sciences (Institute) requests applications for research centers that will contribute to its Education Research and Development Center program (CFDA 84.305C). Under the Education Sciences Reform Act of 2002, the Institute supports National Research and Development Centers (R&D Centers) that are intended to conduct focused, scientific research on key education issues that face our nation. Through this program, researchers have greater resources than are available through the [Education Research Grants program \(CFDA 84.305A\)](#) to tackle more complex education problems, create innovative education solutions, and contribute to knowledge and theory in the education sciences. For information on existing Institute R&D Centers, please see <http://ies.ed.gov/ncer/RandD/>.

For the FY 2018 Education Research and Development Center competition, the Institute invites applications for R&D Centers in four topic areas:

- **Improving Education Outcomes for Disadvantaged Students in Choice Schools**
- **Improving Rural Education**
- **Writing in Secondary Schools**
- **Exploring Science Teaching in Elementary School Classrooms**

Each of these centers will be responsible for the following:

- Contributing to the solution of a specific education problem and to the generation of new knowledge and theories relevant to the focus of the R&D Center.
- Conducting relatively rapid research and scholarship on supplemental questions that emerge within the R&D Center's topic area.
- Providing national leadership within the R&D Center's topic by disseminating research and engaging in dialogue with researchers, practitioners, and policymakers in order to advance evidence-based policy and practice.

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 <http://ies.ed.gov/director/board/priorities.asp> for the Institute's priorities). The Institute encourages researchers to develop partnerships with 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.

This RFA is organized as follows. Part I sets out the general requirements for a grant application to the Institute. Part II describes general requirements for an R&D Center. Part III describes requirements specific to each of the R&D Center topics being competed in FY 2018. Part IV provides general information on funding, award requirements and the scientific peer 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.

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 Officers' contact information is listed in [Part III](#) and [Part VI.H](#).

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 not required 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 peer reviewers to handle the anticipated number of applications.

In addition, the Institute encourages you to view the Institute's on-demand video recordings for advice on choosing the correct research competition, grant writing, or submitting your application. For more information regarding on-demand video topics, see <http://ies.ed.gov/funding/webinars/index.asp>.

B. GENERAL REQUIREMENTS

Applications under the Education Research and Development Center program **must meet the requirements** set out under the subheadings (1) Student Education Outcomes, and (2) Authentic Education Settings in order to be sent forward for scientific peer review.

1. Student Education Outcomes

All research supported under the Education Research and Development Center program **must** address the [education outcomes of students](#) and include measures of these outcomes. The Institute is most interested in two types of education outcomes: (1) student [academic outcomes](#) and (2) student [social and behavioral competencies](#) that support success in school and afterwards.

Academic Outcomes

The Institute supports research on a diverse set of student academic outcomes that fall under two categories. The first reflects **learning and achievement** in core academic content areas. The second category reflects students' **successful progression** through the education system. For **Kindergarten through Grade 12**, the primary student academic outcomes include learning, achievement, and higher-order thinking in the core academic content areas of reading, writing, and [STEM](#) (science, technology, engineering, and/or mathematics) 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).

Social and Behavioral Competencies

The Institute supports research on **social and behavioral competencies**, which are defined as social skills, attitudes, and behaviors that are important to students' academic and post-academic success. Social and behavioral competencies may be included as additional outcomes in your research under certain R&D Center topics so long as your application makes clear how they relate to academic outcomes.

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 and formal programs that take place after school or out of school (e.g., museums, science centers, after-school programs, distance learning programs, online programs) under the control of schools or state and local education agencies. 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 in which most or all of the research is taking place in laboratory settings will be deemed nonresponsive and not sent forward for scientific peer review.**

The Institute defines authentic K-12 education settings as

- 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 of 2015 <http://www2.ed.gov/policy/elsec/leg/esea02/index.html>)
- Career and Technical Education Centers affiliated with schools or school systems

C. APPLICANT REQUIREMENTS

1. Eligible Applicants

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

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.

The applicant 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, the applicant 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 3 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, he/she can 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 listed in [Part III](#). 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 Center 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) (2014) (http://www.ecfr.gov/cgi-bin/text-idx?SID=114a76aaec6398e1309d731056ee2df&node=pt2.1.200&rgn=div5#se2.1.200_1315).

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, your leadership and outreach activities, or your data management plan. If significant revisions to the project arise from these information requests they will have to be addressed under the original budget.

E. READING THE REQUEST FOR APPLICATIONS

Both **Principal Investigators and Authorized Organization Representatives** should read the Request for Applications in order to submit an application that meets the following criteria:

1. Criteria required for an application to be sent forward for scientific peer review (Requirements).
2. Criteria that make for a strong (competitive) application and are used by the scientific peer reviewers (Recommendations for a Strong Application).

1. Requirements

- **RESPONSIVENESS**

- ✓ Meet **Center Narrative** requirements for the selected Center Topic (see [Part III](#)).
- ✓ Meet **Award** requirements for the selected Center Topic (see [Part III](#), and described below).

Topic	Maximum Grant Duration	Maximum Grant Award
Improving Education Outcomes for Disadvantaged Students in Choice Schools	5 years	\$10,000,000
Improving Rural Education	5 years	\$10,000,000
Writing in Secondary Schools	5 years	\$5,000,000
Exploring Science Teaching in Elementary School Classrooms	5 years	\$5,000,000

- **COMPLIANCE**

- ✓ Include all **required content** (see [Part V.D](#)).
- ✓ Include **required Data Management Plan** (see [Part II.A.5](#) and [Part V.D.7](#)).

- **SUBMISSION**

- ✓ Submit electronically via Grants.gov no later than **4:30:00 pm Washington, DC time on September 21, 2017**.
- ✓ 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](#)).

2. Recommendations for a Strong Application

For each R&D Center Topic (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 Center Narrative and relevant appendices.

PART II: R&D CENTER REQUIREMENTS

A. GENERAL REQUIREMENTS FOR ALL R&D CENTER APPLICATIONS

1. Requirements for the Focused Program of Research

The Institute intends for the work of the R&D Centers to include a focused program of research that ideally will result in solutions or answers to specific education problems at the end of 5 years. The Institute expects the focused program of research to comprise at least 75 percent of a Center's activities. The exact percentage will depend on the cost and effort required to carry out the focused program of research.

Although the Centers have broader functions than conducting a focused program of research, the focused research program is the only portion of the activities of a Center that can be well-specified in advance and, thus, can provide a fair basis for evaluating applications for funding. Consequently, the majority of the application should be a detailed description of the focused program of research.

2. Requirements for Other Center Activities

In addition to research on the focal topic, R&D Centers are required to (1) conduct supplemental activities as determined in cooperation with the Institute and (2) provide leadership in the topic area. The Institute will [work cooperatively](#) with the Center to develop complete plans for these activities once the Center is awarded.

a) Supplemental Activities

As part of the Center's work, you must conduct supplemental activities (e.g., meetings, smaller-scale studies) that speak to other issues that are important within the context of the broad topic of the Center. The R&D Center will work cooperatively with the Institute to select and design these supplemental activities to respond to pressing policy and practice needs within the topic covered by the Center. For this reason, the Institute does not expect a detailed plan for these supplemental activities in the application. At least 5 percent of the maximum award amount for a Center should be reserved to support these supplemental activities that will be determined in cooperation with the Institute once an award is made.

b) National Leadership and Outreach Activities

The Institute expects R&D Centers to have national visibility and function as a trusted source of scientific research on its topic. The Institute expects each R&D Center to develop a website that provides links to reports, papers, and other resources that have been peer reviewed or have been through a comparable quality review process. The Institute also encourages webinars, podcasts, and other innovative uses of technology to share information and encourage discussion of the Center's work among policymakers and practitioners. The Institute encourages applicants to consider the various audiences for the research and the types of publications, products, and dissemination activities that will be best suited to their needs. These may include reports, research briefs, methodological papers, data collection tools, and other documents, along with oral presentations and briefings. The Institute encourages publications in scholarly journals, but also encourages applicants to consider venues that are more likely to be read and used by policymakers and practitioners. The Institute encourages applicants to consider at least one publication that will synthesize the research and draw lessons across studies and study sites. Online strategies for communication and dissemination are also strongly encouraged.

Finally, the Institute considers researcher training to be an important element of national leadership and encourages R&D Centers to provide opportunities for graduate students and early career researchers to participate in instrument development, data collection, analysis, and publication activities. The Institute will work cooperatively with the Center to provide feedback on the national leadership and outreach activities once the Center is awarded.

3. Management and Institutional Resources

The Institute expects that the focused program of research, the supplemental activities, and the national leadership activities will require the coordination of multiple researchers and other partners. Therefore, describe your plans and procedures for the overall management of the Center and its diverse activities.

If the plans for the first year of grant activities include substantial work to be conducted in schools or other [authentic education settings](#), document the availability and cooperation of the schools or other authentic education settings that will be required to carry out that work via a letter of agreement from the education organization(s) in [Appendix D](#) of your application.

4. Personnel

Competitive applications will have leadership and staff that collectively demonstrate the following:

- Expertise in the content areas relevant to the Center topic.
- The methodological expertise to carry out the proposed projects.
- Sufficient experience working with authentic education settings to carry out the proposed projects.
- Experience that is relevant to national leadership activities.

5. Dissemination

The Institute is committed to making the results of Institute-funded research available to a wide range of audiences. The Institute has a public access policy (see <http://ies.ed.gov/funding/researchaccess.asp>) that requires all grantees to submit their peer-reviewed scholarly publications to the [ERIC](#) (Education Resources Information Center) and that requires grantees to share [final research data](#) in a timely fashion, and no later than the time of publication in a peer-reviewed scholarly publication. Applications to the Education Research and Development Center program must include a [Data Management Plan \(DMP\)](#) placed in [Appendix E](#) that describes the method of data sharing, types of data to be shared, and documentation that will be created to promote responsible use of data.

Your DMP (recommended length: no more than 5 pages) describes your plans for making the final research data from the proposed R&D Center 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 studies proposed and the data to be 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:

- Type of data to be shared.
- Procedures for managing and for maintaining the confidentiality of Personally Identifiable Information.
- Roles and responsibilities of center 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 a data agreement that specifies conditions under which the data will be shared will be required.
- 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 scientific peer review process will not include the DMP in the scoring of the scientific merit of the application. The Institute's Program Officers will be responsible for reviewing the completeness of the proposed 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](#)).

PART III: R&D CENTER TOPIC REQUIREMENTS

A. APPLYING TO AN R&D CENTER TOPIC

For the FY 2018 Education Research and Development Center competition, you must submit your application to one of the four R&D Center topics being competed:

- **Improving Education Outcomes for Disadvantaged Students in Choice Schools**
- **Improving Rural Education**
- **Writing in Secondary Schools**
- **Exploring Science Teaching in Elementary School Classrooms.**

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

For each R&D Center Topic, the Purpose; Sample, Outcomes, and Setting Requirements; Center Narrative Requirements and Recommendations (Significance, Research Plan, Leadership and Outreach, Management and Institutional Resources, Personnel); Award Requirements; and Data Management Plan Requirements are described. Please note the following:

- The requirements for each R&D Center Topic are the minimum necessary for an application to be sent forward for scientific peer review. **Your application must meet all requirements listed for the Center topic 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 Center 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. Improving Education Outcomes for Disadvantaged Students in Choice Schools

Program Officer: Dr. Allen Ruby (202-245-8145; Allen.Ruby@ed.gov)

a) Purpose

Under this topic, the Institute is requesting applications to establish a **National Research and Development (R&D) Center on Improving Education Outcomes for Disadvantaged Students in Choice Schools (School Choice Center)** to examine how states and school districts can implement [school choice](#) programs and policies in ways that improve education outcomes for disadvantaged students. While the Institute has funded research on school choice programs in the past – including the [National Center on School Choice in 2004](#) – it is launching a new School Choice Center for three reasons:

- The continued interest in and expansion of school choice.
- The mixed results from evaluations on the impacts of school choice on [student education outcomes](#).
- The wide variation in choice programs and policies which may be linked to the mixed findings on impacts.

In the 21st Century, students (and their parents) have greater access to publicly supported options to choose their K-12 schools (rather than attending schools based on where they live, i.e., through geographic assignment of students) than in previous decades (U.S. Department of Education 2016a and 2016b) While the research base on [choice schools](#) is growing, there is a pressing need for research that helps policymakers and practitioners identify clear steps they can take to improve outcomes for economically and socially disadvantaged students, and for students with or at risk for disabilities.

For this Request for Applications, the Institute is using the term "[choice options](#)" to represent these publicly financed options to attend other schools. The provision of choice options is intended to offer students access to schools providing a better education than those they would attend through geographic assignment based on their residence,¹ and also to promote improvement of all schools in response to their need to attract students rather than rely on geographic assignment. Choice options are implemented in several ways, including:

Choice Definitions for this Topic

Choice schools: schools chosen by students and their parents rather than through geographic assignment based on their residence and that receive public funding to educate these students. Some public choice schools may include students by choice and by geographic assignment. Other choice schools include students solely by choice (e.g., most magnets, charters, and private schools).

Choice options: the types of schools and mechanisms that support students' attendance at choice schools including open enrollment, magnet schools, charter schools, and public financial supports for attending private schools (e.g., vouchers, tax credit funded scholarships, [education savings accounts](#), personal tax credits and deductions).

Choice programs and policies: State and local programs and policies that influence how choice options function and how choice schools are established, funded, enroll students, instruct students, and are overseen.

¹ "Better" may be defined in terms of student education outcomes (academic and social-behavioral) or in terms of the fit between the type of education parents want for their children and the type provided by the school. For the Institute, the issue of fit would be considered an intermediate outcome whose importance would be justified by its links to student education outcomes.

- Allowing choice among existing traditional public schools (which reduces these schools' reliance on geographically assigned students) through such options as inter-district and intra-district choice (also called open enrollment).
- Supporting the creation of new choice schools (sometimes from existing traditional public schools) that are to provide a different education experience and may have greater autonomy from district and state regulation through options such as [magnet schools](#), [charter schools](#), and online schools.
- Providing financial support for students to choose to attend private schools through options such as [vouchers](#), corporate [tax-credit-funded scholarships](#), education savings accounts, and personal tax credits and deductions for tuition.

The expansion of school choice can be seen in its availability and the increase in students taking part (with wide variation by choice option). For example:

- Open Enrollment: Forty-six states and D.C. had [open enrollment policies](#) of varying types in 2016 (Wixom 2017a). For 2012 (the latest available data from the National Household Education Survey), 13 percent of students in grades 1-12 were in a public school (not including charter schools) chosen by their parents through choice options such as open enrollment and magnet schools (U.S. Department of Education, 2016a).
- Magnet Schools: The Common Core of Data shows an increase in the role of magnet schools. From the 2000-01 school year to the 2014-15 school year, magnet schools doubled as a percent of all schools (from 1.6 percent to 3.3 percent), and based on percent of student attendance (from 2.6 percent of students attending school to 5.2 percent) (U.S. Department of Education, 2016b).
- Charter Schools: Forty-three states and D.C. have charter school legislation (Thomsen 2016). From the 2000-01 school year to the 2014-15 school year, charter schools increased as a percent of all schools (from 2.1 percent to 6.9 percent) and based on percent of student attendance (from 1 percent of students attending school to 5.5 percent) (U.S. Department of Education, 2016b).
- Public Support for Private School Attendance: The Education Commission of the States reports that there are 25 voucher programs in 14 states and D.C. (with two states having programs for students living in districts that do not contain a school), 4 operating Education Savings Accounts in 4 states (a fifth is under legal review), and 21 tax credit scholarship programs in 17 states (Wixom, 2017b, Railey, 2016). An estimated 0.6 percent of students are involved in these programs (Egalite and Wolf, 2016). In addition, 5 states had individual tax credit programs in 2016 and 4 states had individual [tax deduction programs](#) (Railey, 2017).

All research supported under the Institute's Research Grants programs **must** address the education outcomes of students and include measures of these outcomes. The Institute is most interested in (1) [student academic outcomes](#) and (2) [student social and behavioral competencies](#) that support success in school and afterwards. As noted above, the expansion of choice options has been accompanied by an increase in research on choice, but the current research base does not provide a clear conclusion regarding whether choice improves student education outcomes. In some areas, recent research is lacking, while in others, mixed or negative findings raise questions about whether current choice options can make a major contribution to the improvement of education outcomes for disadvantaged students. For example, mixed and negative findings on choice options have been found for intra-district choice (Cullen, Jacob and Levitt 2005), charter schools (Epple, Romano, Zimmer 2015), magnet schools (Berends and Waddington 2017), statewide voucher programs (Abdulkadiroglu, Pathak, and Walters

2015; Mills and Wolf 2017; Figlio and Karbownik, 2016; Berends and Waddington 2017), and district voucher programs (Wolf et. al. 2010; Cowin 2013; Dynarski et al. 2017).²

The Institute does not intend that the School Choice Center carry out large-scale evaluations of the overall effects of a state or local school choice option. For example, the Institute is not interested in an evaluation of student education outcomes in charter schools (or any other choice option) versus traditional public schools. Evaluations of this type can be funded under other Institute grant programs (such as the [Education Research Grants program – 84.305A](#), the [Special Education Research Grants Program 84.324A](#), or the [Partnerships and Collaborations Focused on Problems of Practice or Policy 84.305H](#)). Instead, the Institute intends that the Center (1) examine variations in [choice programs and policies](#) and their associations with the education outcomes of disadvantaged students, (2) identify how these programs and policies might be improved, and (3) evaluate whether such improvements lead to better education outcomes for disadvantaged students. The overall purpose of the Center is to learn how states and school districts can revise their choice programs and policies in ways that improve outcomes for disadvantaged students.

Choice programs and policies within the same type of choice option may vary across school districts and states. For example, there is broad variation in rules governing the establishment of a charter school, the process of enrolling in a choice school, the eligibility for a voucher, and the oversight of choice schools. State and local education agencies interested in improving student outcomes are revising their choice policies on an ongoing basis, and – working with researchers – may also be receptive to introducing changes to policies that are hypothesized to lead to better outcomes. Examples of such programs and policies that vary across districts and states include (but are not limited to):

- Programs and policies to extend choice options to disadvantaged students who are presently underserved or excluded.
- Programs and policies to help ensure the establishment of new choice options (e.g., authorization of charter schools) that benefit the education outcomes for disadvantaged students.
- Eligibility requirements for funding and funding allocations that better support the education success for disadvantaged students.
- Programs and policies to help disadvantaged students (and their parents) choose schools most likely to improve their education outcomes.
- Programs and policies to improve school climate and instruction for disadvantaged students in choice schools.
- Oversight and regulatory programs and policies to ensure that choice schools are improving the education outcomes for disadvantaged students in order to remain a choice option.

The above list is for illustrative purposes only. Applicants are encouraged to propose research on the programs and policies that they view as (1) critical to improving the impact of choice options on education outcomes for disadvantaged students, (2) being of broad interest to school districts and states that provide school choice, and (3) generalizable to multiple locations.

² These citations are not intended to act as a summary of research on choice options. Some of the same literature cited also shows that specific choice options have beneficial impacts on student education outcomes, e.g., intra-district choice students who chose career academies (Cullen, Jacob and Levitt 2005), charter schools, especially oversubscribed ones, (Epple, Romano, Zimmer 2015), and district voucher programs that did not improve student achievement but were linked to gains in education attainment (Wolf et. al. 2010; Cowin 2013). The concern, motivated by some of the more recent studies, is whether current approaches to supporting choice options can be expected to lead to the broad improvement of education outcomes, including those of disadvantaged students.

The work of the School Choice Center is divided into three parts:

- A focused program of research on choice programs and policies to improve student education outcomes;
- National leadership and outreach; and
- Supplemental activities.

For the **focused program of research**, the School Choice Center is required to conduct studies that examine choice programs and policies with the intent to identify potential improvements to them that would lead to improved education outcomes for disadvantaged students. The proposed studies can fall along the continuum of research design from descriptive to correlational to causal. This work may include:

- Reviews and meta-analyses of previous and ongoing work.
- Analyses or re-analyses of secondary data.
- Evaluations of changes in choice programs and policies expected to benefit disadvantaged students.

Your focused program of research may include several studies related to programs and policies under a specific choice option or several choice options. For example, you might study whether different ways of authorizing charter schools lead to different student outcomes as part of a series of studies on (1) a set of programs and policies regarding charter schools or (2) authorization of multiple choice options such as charter schools, magnet schools, online courses, and possibly, authorization of private schools to accept public funds. A common thread to the studies must be an emphasis on measuring education outcomes for disadvantaged students.

The underlying assumption of this topic is that variation in choice programs and policies among states and districts can be used to identify programs and policies better supporting success for disadvantaged students. As a result, the School Choice Center's work will require partnering with education agencies. Collaborations will be necessary for primary data collection and analysis (and in some cases, for the re-analysis of secondary data) and to test improvements in choice programs and policies. The Institute also seeks deeper collaborations that will allow for substantive discussions between researchers and agency practitioners on determining the key choice programs and policies to be examined, ways to improve them, and the piloting and testing of improvements. The Institute is not requiring formal researcher-practitioner partnerships to be in place as part of your application (though they can be included if in place) but expects that your application will include the support of some education agencies to carry out the focused program of research and that you will have a plan to identify any additional education agencies that are expected to take part in the focused program of research.

The School Choice Center is expected to provide **national leadership and outreach** that will:

- Bring together researchers from outside the Center doing related work on school choice as well as the practitioners and policymakers implementing choice options (e.g., state and local education agencies, other public agencies, choice school operators) in order to:
 - Inform researchers and education agencies of the ongoing research and practice occurring regarding choice options.
 - Provide constructive comment on the research being carried out by the Center.
 - Foster collaborations and encourage joint research.
- Broadly disseminate findings to researchers, policymakers, practitioners, and the public.

During the course of its work, the School Choice Center is also expected to conduct **supplemental activities** (e.g., meetings, smaller-scale studies) that speak to other issues that are important within the context of school choice. The School Choice Center will work cooperatively with the Institute to select and design these supplemental activities to respond to pressing policy and practice needs within the topic covered by the Center. For this reason, the Institute does not expect a detailed plan for these supplemental activities in the application but does expect the grantee to set aside 5 percent of the maximum grant award (\$500,000) for supplemental activities.

b) Requirements and Recommendations

Applications under the School Choice Center topic **must meet the requirements set out under (1) Sample, Outcomes, and Setting; (2) Center Narrative; (3) Awards; and (4) 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 Center Narrative requirements.

Data Management Plan
A required plan for making the [final research data](#) from the proposed R&D Center accessible to others.

(1) Sample, Outcomes, and Setting

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

a. Sample

- Your research **must** focus on disadvantaged students in grades K-12. Disadvantaged students are considered students who are economically and/or socially disadvantaged, as well as students with or at risk for a disability.
 - You may include non-disadvantaged students for comparison purposes.

b. Outcomes

- Your research **must** include measures of [student education outcomes](#) that are of practical interest to parents, schools, districts, and states. These may include grades, state or district standardized assessments of student achievement, state end-of-course exams, exit exams, attendance and tardiness rates, disciplinary actions, drop out and/or graduation rates, and college entry, progress, and graduation.

c. Setting

- Your research **must** be conducted in [authentic K-12 education settings](#) or on data collected from such settings. These settings must include choice schools and, may include, if needed for comparison purposes, schools serving students based on geographic assignment (non-choice schools).
- The Institute expects that the Center will draw upon information and data from multiple education agencies. To that end, applicants **must** propose to study choice options in at least two states.

(2) Center Narrative

The Center narrative (recommended length: no more than 35 pages) **must** include five sections – Significance, Research Plan, Leadership and Outreach Activities, Management and Institutional Resources, and Personnel.

a. Significance of the Focused Program of Research

Requirements: In order to be responsive and sent forward for scientific peer review, applications under the School Choice Center topic **must** include a Significance section that describes the following:

- (i) The disadvantaged students to be addressed.
- (ii) The choice options that will be the focus of the study (e.g., open enrollment, charter schools, magnet schools, vouchers).
- (iii) The improvements to choice programs and policies hypothesized to produce better outcomes for disadvantaged students.
- (iv) A [Theory of Change](#) for how the choice programs and policies to be examined are linked to the education outcomes for disadvantaged students and any intermediate links to the choice options themselves.

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 School Choice Center's work.

- Describe how you will identify disadvantaged students, for example, through the use of specific student, family, and/or neighborhood characteristics.
 - Describe the specific measures you will use to determine disadvantage.
 - If you intend to examine specific subgroups of disadvantage, describe the expected size of each subgroup (noting if it is large enough to support exploratory and causal studies) and the specific measures you will use to identify each subgroup.
 - Justify the choice of this group or subgroups, for example, its significance nationally and in specific locales, and how its disadvantage impedes its education success.
- Identify the specific choice option(s) the School Choice Center will examine. Broadly, this might include such options as inter-district choice, widespread intra-district choice, magnet schools, charter schools, online schools, and support of private school attendance. Applicants may narrow their focus to specific types of any of these choice options (e.g., intra-district high school choice in urban areas, "No Excuses" charter schools).
 - Provide detailed definition(s) of the choice option(s) you will be studying.
 - Justify the importance of the choice option(s) for supporting the education needs and improving outcomes for the disadvantaged students you will be studying.

- Describe the specific choice programs and policies that will be the focus of the School Choice Center’s research.
 - Provide detailed definition(s) of the choice programs and policies you will be studying.
 - Justify why the choice programs and policies you have selected would be key to improving the quality of education for disadvantaged students. For example, you might justify focusing on improving access to choice if previous research showed disadvantaged students not taking up available opportunities to attend choice schools offering higher quality education. Similarly, you might justify focusing on the elements of the education provided by certain choice schools (e.g., curriculum, instruction, expectations, climate) if previous research showed that disadvantaged students attending such schools do not show improved education outcomes.

- In your Theory of Change, you should detail how the choice programs and policies you are focusing on (and improvements to them) can lead to improvements in the quality of education provided by the choice options and the education outcomes for disadvantaged students.
 - Include important intermediate outcomes that contribute to the student education outcomes.
 - Cite related research on your choice option, choice program, or practice that supports your Theory of Change.
 - A logic model or other diagram may be helpful to visually demonstrate your theory.

- Discuss how the choice programs and policies you propose to study will be of interest to the field and generalizable to other settings.

b. Research Plan for the Focused Program of Research

Requirements: In order to be responsive and sent forward for scientific peer review, applications under the School Choice Center topic **must** include a Research Plan section that describes the following:

- (i) The research questions you intend to address.
- (ii) The studies to be carried out to address the research questions.
- (iii) The research design of each study.
- (iv) Power analyses for any causal studies.
- (v) The data analysis procedures for each study.
- (vi) Collaborations or agreements with education agencies to develop and implement the research.

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.

- In the Significance section, you have already addressed the components of your research questions. In the Research Plan section, it may be helpful to give a short recap of the research questions to help guide the description of studies proposed, i.e., to show how the studies can lead to answers to the research questions).
- You should describe how the proposed studies will lead to a better understanding of the choice programs and policies studied and could be used to support their improvement in ways that would benefit the education outcomes for disadvantaged students.
- The Institute recommends you include a combination of exploration and efficacy studies in your Center plans. These may include:
 - Exploration studies to understand how a specific choice program or policy is implemented, how it works, and what obstacles it may create or confront for improving school and student outcomes.
 - Exploration studies that link a specific choice program or policy to school outcomes and to student education outcomes.
 - Studies that compare how a specific choice program or policy is implemented in different places and how those differences may be related to differences in school and student education outcomes.
 - Pilot studies that test different approaches to a specific choice program or policy to identify evidence of promise of improving school and student outcomes through a variant of that program or policy as well as the feasibility of implementing it.
 - Causal studies to test the impacts of specific variations in a choice program or policy on the education outcomes for disadvantaged students.
 - Continuous improvement research to carry out an ongoing improvement process of a specific program or policy using a series of short-term cycles of testing, feedback, and further revision with ongoing measurement of how each revision links to (correlates with) or impacts (causes) student education outcomes.
- You should describe how you will study the implementation of a choice program or policy. You should include a discussion of how you will assess fidelity of implementation of the program or policy and measure the contrast between variations in the program or policy or between it and business as usual.
- The types of studies you propose will partly depend on the existing literature. For some choice programs and policies there is a better-developed literature on the actual programs and policies being used and their implications for the quality of education provided and student education outcomes. In such cases, there may be greater opportunity to analyze secondary data or propose pilot testing or evaluations while reducing the need to begin with initial exploratory studies.
- For each study you propose, you should detail its design.³ This should include:

³ Additional recommendations on what to include when describing the design and analysis of your studies are provided in the [Request for Applications for Education Research Grants \(84.305A\)](#) under Part III: Research Goals. This section covers Exploration, Development and Innovation (which includes pilot tests), and Efficacy and Replication (causal studies). In addition, if you are

- The population, sample, and setting to be addressed.
- The relationships you will be examining and whether they are to be descriptive, correlational, or causal.
- The data you will be using and its source (primary and/or secondary data).
 - If primary data, how it will be collected.
 - If secondary data, how it will be obtained.
- The key variables and how they will be measured, including:
 - The choice program or policy.
 - Any intermediate outcomes (e.g., school, teacher, or parent outcomes).
 - The student education outcomes.
- Any mediators or moderators you will examine.
- The statistical power of the research design to detect a reasonably expected and minimally important effect on the student education outcomes for all causal analyses.
- Data analysis.
 - For quantitative analysis, describe the statistical models to be used. Discuss why they are the best models for answering your research questions, how they address the multilevel nature of education data, and how well they control for selection bias.
 - For qualitative data, describe the intended approach to data analysis, including any software that will be used.
- Discuss whether and how you intend to identify any education agencies, in addition to those included in the application, that may be interested in pilot testing and evaluating choice programs and policies and how you will build partnerships with them to jointly develop and implement these studies.
- Provide a timeline (in the narrative or Appendix) for the series of studies and for each study, including such actions as sample selection and assignment, data collection, and data analysis.

c. Leadership and Outreach Activities

Requirements: In order to be responsive and sent forward for scientific peer review, applications to the School Choice Center topic **must** describe the following:

- (i) The leadership and outreach activities of the Center.

Recommendations for a Strong Application: In order to address the above requirements, the Institute recommends that you include the following in your Leadership and Outreach Activities section.

proposing to work in partnership with an SEA or LEA, you may wish to review the recommendations for describing your partnership and its work provided in the [Request for Applications for Partnerships & Collaborations Focused on Problems of Practice or Policy \(84.305H\)](#) under each of the two topics (the Researcher-Practitioner Partnership topic is similar to an Exploration study, and the State/Local Evaluation topic is similar to a causal study).

- Describe the audiences you intend to reach and the various activities you will undertake to communicate with these audiences.
- Describe your plan to coordinate and collaborate with other researchers, including other researchers funded by the Institute, with interest and expertise in the area of school choice.
- Describe your plan to coordinate and collaborate with education agencies implementing school choice and other education providers, including private schools.
- Describe your plan to provide useful information for parents and students who may be interested in taking part in school choice.
- Describe how you will obtain input from researchers, education agencies, non-public choice providers, parents, and students on the Center's research goals and dissemination activities.
 - You may wish to form an advisory panel to provide ongoing input.
- Describe the Center website you will design, including its content and the audiences you intend to reach. The Institute also encourages applicants to use social media and electronic forms of communication (such as webinars, podcasts, and videos) to broaden the reach of the Center at a relatively low cost.

d. Management and Institutional Resources

Requirements: In order to be responsive and sent forward for scientific peer review, applications under the School Choice Center topic must describe the following:

- (i) The organizational structure of the Center and the management plan for how it will be run.
- (ii) The resources to conduct the work of the Center, including the focused program of research, the supplemental activities, and the national leadership and outreach activities.

Recommendations for a Strong Application: In order to address the above requirements, the Institute recommends that you include the following in your Management and Institutional 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 Center's work, and that you have a plan to manage the multiple researchers who will participate in the Center.

- Describe your plans and procedures for the overall management of the Center and its diverse activities.
- Include an organization chart that shows how the major functions or activities of the Center will be organized and how key personnel will relate to one another.
- Document the availability and cooperation of the schools and education agencies that will be required to carry out that work via a letter of agreement from the education organization(s) in [Appendix D](#) of your application.

e. Personnel

Requirements: In order to be responsive and sent forward for scientific peer review, applications under the School Choice Center topic **must** describe the following:

- (i) The key personnel making up the School Choice Center's 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 completely implement the proposed activities.

- Describe the personnel at the primary applicant institution and any subaward institution along with any consultants. Competitive applications will have leadership and staff that collectively demonstrate:
 - Expertise in the disadvantaged students and their families that are the focus of your work.
 - Expertise in the choice options you propose to study.
 - Expertise in the student outcomes you will be examining.
 - The methodological expertise to design and carry out the proposed studies.
 - Experience working with schools and education agencies on this type of research.
 - Experience that is relevant to the proposed national leadership activities.
 - Experience and capacity to manage a project of this size and type.
- The Institute encourages applicants to form multi-disciplinary teams and to consider scholars with different perspectives.
- Briefly describe the qualifications, roles, responsibilities, and percent of time (effort over the calendar year) to be devoted to the School Choice Center for all key personnel.

(3) Awards

An application under the School Choice Center topic **must** conform to the following limits on duration and cost:

Duration Maximum:

- **The maximum duration** of the School Choice Center **is 5 years**. An application proposing a Center length of greater than 5 years will be deemed nonresponsive to the Request for Applications and will not be accepted for review.

Cost Maximum:

- **The maximum award** for the School Choice Center **is \$10,000,000 (total cost = direct costs + indirect costs)**. An application proposing a budget higher than the maximum award will be deemed nonresponsive to the Request for Applications and will not be accepted for review.

- At least **75 percent** of the total budget (direct costs + indirect costs) **must be allocated to the focused program of research**.
- At least **5 percent** of the maximum award (\$500,000) **must be reserved for supplementary studies** to be designed in collaboration with the Institute.

(4) Data Management Plan

Applications under the School Choice Center topic must include a Data Management Plan (DMP) placed in [Appendix E](#). Your DMP (recommended length: no more than 5 pages) describes your plans for making the [final research data](#) from the proposed R&D Center 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 studies conducted by the R&D Center 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:

- 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 a data agreement that specifies conditions under which the data will be shared will be required.
- 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 [Narrative Budget Justification for the Center](#). The scientific peer review process will not include the DMP in the scoring of the scientific merit of the application. The Institute's Program Officers will be responsible for reviewing the completeness of the proposed 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](#)).

2. Improving Rural Education

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a) Purpose

Under this topic, the Institute is requesting applications to establish a **National Research and Development (R&D) Center on Improving Rural Education (Rural Center)**. Its central purpose is to build the capacity of rural schools to use high-quality, scientific research to improve student outcomes, as envisioned by the Every Student Succeeds Act of 2015 (ESSA).⁴ Limited resources, as well as methodological and logistical challenges, often impede research in rural settings, particularly in isolated locations. The goals of the Rural Center are to:

- Conduct research on a major problem or issue in rural education that involves local stakeholders and addresses their needs.
- Develop and test a practical tool or strategy to support the conduct and use of research by school personnel in rural settings, including *remote* rural settings.
- Develop a statistical or methodological procedure or product that will help rural education researchers strengthen their ability to produce accurate, reliable, and useful research.

Nearly ten million children attend over 27,000 public elementary and secondary schools in over 7,000 rural school districts across the country.⁵ These students represent over 20 percent of all students in the United States and account for over 23 percent of state education expenditures (Chicchinelli & Beesley, 2017). On the one hand, rural schools often have many strengths, including smaller class sizes and less student anonymity than schools in urban or suburban settings, and they frequently serve as the center of the community (NCER, 2014; Nugent et al., 2017). On the other hand, while rural communities in the United States vary widely in geography and demographics (NASBE, 2016), many face common challenges including poverty; long distances from home to school; lack of school resources such as technology, advanced coursework, and qualified personnel; and fewer local career opportunities for students after high school (Showalter et al., 2017; Rosenberg, Christian, & Angus, 2015).

ESSA highlights the need for research to guide state and district decisions about how to improve school performance and student outcomes. The Institute currently supports rural education research through its [Regional Educational Laboratory \(RELs\)](#), [research grant programs](#), and [statistical data collections](#). The RELs, for instance, devote at least 25 percent of their funding to rural issues, and the National Center for Education Statistics gathers data and reports on the conditions of rural schools. Despite these investments, the Institute recognizes that rural schools often do not have sufficient personnel and other resources needed to conduct research or make research-based improvements. Moreover, there are methodological challenges associated with conducting research in settings that have small numbers of schools and students. Prior work has shown that there are also major logistical hurdles to conducting research in rural areas, such as limited access, wide geographic spread with low densities, and geographic isolation (Bovaird & Bash, 2017; Rosenberg et al., 2015). Additionally, targeted assistance and new approaches are needed to build the capacity of rural schools and districts to conduct and use research.

The work of the Rural Center is divided into three parts:

- A focused program of research to address the three goals of the center;
- National leadership and outreach; and
- Supplemental activities.

⁴ <http://www2.ed.gov/documents/essa-act-of-1965.pdf>.

⁵ These 2013-14 statistics were retrieved from <https://nces.ed.gov/surveys/ruraled/tables/a.1.a.-2.asp>. Other national statistical information on rural education can be found at <https://nces.ed.gov/surveys/ruraled/districts.asp>.

The Rural Center will carry out a **focused program of research** with three components. The first will be a research study on a problem or issue that is of concern to rural schools and rural school districts (for some examples, see [National Center for Education Research, 2014](#); [National Rural Education Association, 2016](#)). Applicants should explain why the problem or issue they selected is significant to education policy and practice and how the research they are proposing may help rural schools improve student education outcomes. Applicants may propose a single, large study or two or more smaller studies that will build new knowledge on how to improve education policy and practice in rural settings. The Institute particularly encourages studies that are designed and carried out as partnerships between researchers, Local Education Agencies (LEAs), and other relevant stakeholders, such as State Education Agencies (SEAs) and other state or community organizations that support rural schools.⁶ These may be conceived as Researcher-Practitioner Partnerships similar to those supported through the Institute's [Partnerships and Collaborations Focused on Problems of Practice or Policy Program](#) (84.305H)⁷ or other approaches to involving communities in research (see Israel, Eng, Schulz, and Parker 2005 for an example from the health field). Applicants might also consider a continuous improvement approach, such as design-based implementation research (e.g., Penuel & Martin, 2015), improvement science and networked improvement communities (e.g., Grunow & Park, 2014), the "plan, do, check, act" (PDCA) or "plan, do, study, act" (PDSA) method (e.g., Deming, 1986), the model for improvement (e.g., Langley et al., 2009), or other approaches.

The second component of the focused program of research is the development and testing of a practical tool or strategy that can help rural district or school personnel overcome geographic or resource constraints that limit their ability to take part in and benefit from education research, particularly in remote rural settings. For example, the Rural Center may develop and test applications for smart phones, tablets, or other devices to help school personnel gather data and receive feedback that they can use to improve classroom instruction. The first rural R&D center supported by the Institute, the [National Research Center on Rural Education Support](#), developed the Targeted Reading Intervention which made use of laptop, webcam, and web conferencing in order to provide a real time observation, professional development, and coaching program for K-1 teachers (Amendum, Vernon-Feagans, & Ginsberg 2011). Applicants should make clear what problem their tool or strategy is intended to solve and present a plan that includes working with remote rural schools to assess the feasibility and utility of the tool or strategy.

The third component of the focused program of research is the development of a statistical or methodological product or procedure (e.g., methods, guidelines or other methodological resources, software) that can be used by rural education researchers to improve the designs of their studies, analyses of their data, and interpretations of their findings. For example, the Institute's second rural R&D center, the [National Center for Research on Rural Education](#), used advanced statistical modeling to preserve and feature the uniqueness of rural settings by finding alternatives to traditional simple random assignment, adapting measurement paradigms to reduce the amount of data required, and working with small samples and complex models (Bovaird & Bash, 2017; Sheridan, Dynarski, & Bovaird, 2017). Applicants may build on work of this type or propose other approaches to strengthen rural education research, such as developing methods or guidelines on how to pool data across rural settings to increase statistical power for causal studies.

⁶ Local education agencies may also include tribal education agencies and organizations authorized by the state to support rural districts, e.g., regional education service agencies (RESAs) or boards of cooperative educational services (BOCES) that work with rural districts.

⁷ This program supports research that is carried out by research institutions and U.S. State and Local Education Agencies working collaboratively on problems or issues that are high priorities for the education agencies. Together, partnerships are expected to develop the research questions, agree on the research design and its implementation, establish a mechanism to discuss the results as they are obtained and direct further research, consider the practice and policy implications of the results, disseminate the results to multiple audiences, and plan for future research.

The Institute expects applicants to conduct their focused program of research in different parts of the country (at a minimum, in two different states or territories) and encourages applicants to consider how variations in population characteristics, state and local policies, and other contextual factors may affect student outcomes. The Institute also encourages applicants to conduct at least some of their research in schools situated in remote locations, as defined by the National Center for Education Statistics (2006).⁸

In addition to the focused program of research, the Institute expects the Rural Center to provide **national leadership and outreach** on rural education research. This includes hosting a website and disseminating the Center's findings and products to policymakers, practitioners, and other researchers interested in using scientific methods to improve rural education. The Institute encourages the Rural Center to host meetings and conferences (both in-person and virtual) to foster collaboration and communication on problems or issues of importance to rural educators and researchers. The Rural Center is encouraged to build capacity in the field by involving and training researchers from communities in or near where the research is taking place: for example, faculty from regional colleges and universities, or research analysts based in state and local education agencies. The Institute also encourages the Rural Center to help develop the next generation of rural education researchers by providing training fellowships and other learning opportunities for graduate students and early career researchers.

During the course of its work, the Rural Center is also expected to conduct **supplemental activities** (e.g., meetings, smaller-scale studies) that speak to other issues that are important within the context of rural education. The Rural Center will work cooperatively with the Institute to select and design these supplemental activities to respond to pressing policy and practice needs within the topic covered by the Center. For this reason, the Institute does not expect a detailed plan for these supplemental activities in the application but does expect the grantee to set aside 5 percent of the maximum grant award (\$500,000) for supplemental activities.

Rural Locale Codes

The National Center for Education Statistics defines rural locales as follows (NCES, 2006):

Fringe: Census-defined rural territory that is less than or equal to 5 miles from an urbanized area, as well as rural territory that is less than or equal to 2.5 miles from an urban cluster

Distant: Census-defined rural territory that is more than 5 miles but less than or equal to 25 miles from an urbanized area, as well as rural territory that is more than 2.5 miles but less than or equal to 10 miles from an urban cluster

Remote: Census-defined rural territory that is more than 25 miles from an urbanized area and is also more than 10 miles from an urban cluster

⁸ According to [NCES \(2006\)](#), a remote locale is a "Census-defined rural territory that is more than 25 miles from an urbanized area and is also more than 10 miles from an urban cluster" (Note: "Urban cluster" is defined as a population of 2,500-50,000).

b) Requirements and Recommendations

Applications under the Rural Center topic **must meet the requirements set out under (1) Sample, Outcomes, and Setting; (2) Center Narrative; (3) Awards; and (4) 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 Center Narrative requirements.

Data Management Plan
A required plan for making the [final research data](#) from the proposed R&D Center accessible to others.

(1) Sample, Outcomes, and Setting

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

a. Sample

- Your research **must** focus on typically developing students in K-12.
 - You may focus on the whole K-12 system or a subset of grade/age levels.
 - Students with or at risk for disabilities may be included in your proposed research activities, but must not be the primary focus.⁹

b. Outcomes

- Your research **must** include measures of [student education outcomes](#) ([academic](#) or [social-behavioral competencies](#)).

c. Setting

- Your research **must** be conducted in [authentic K-12 education settings](#), or on data collected from such settings.
- Your research settings **must** meet the [NCES definitions for rural locales](#).¹⁰
- You **must** plan to conduct research in at least two states or territories.

(2) Center Narrative

The Center narrative (recommended length: no more than 35 pages) for your application must include five sections: Significance, Research Plan, Leadership and Outreach Activities, Management and Institutional Resources, and Personnel.

a. Significance of the Focused Program of Research

Requirements: In order to be responsive and sent forward for peer review, applications under the Rural Center topic **must** include a Significance section that describes the following:

⁹ The Institute supports research on students with or at risk for disabilities from birth through high school through grant programs run by the Institute's National Center for Special Education Research (<https://ies.ed.gov/ncser/>).

¹⁰ See [NCES \(2006\)](#).

- (i) A major problem or issue in rural education that the Center will address through its research study.
- (ii) A practical research tool or strategy for school or district personnel to use that you plan to develop and test.
- (iii) A method or statistical procedure or product for researchers that you will develop.
- (iv) The rural education settings where you plan to conduct your research.

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 Center's work.

- Describe the need for a new rural R&D Center, taking into account the lessons from prior rural education research and the current challenges facing rural education.
- Specify the major rural education problem(s) or issue(s) that the Center will address and how the problem(s) or issue(s) were chosen.
- Review the relevant literature on the selected problem(s) or issue(s), emphasizing what is unique or important to rural education. Identify any research gaps and the role the Center will play in addressing such gaps.
- Explain how you will involve Local Education Agencies¹¹ and other relevant stakeholders in your focused program of research.
- Discuss your approach to working or partnering with rural schools and/or school districts. Explain why you think your approach will help rural schools and school districts build capacity to improve student outcomes.
- Explain how the Center's work will advance theory and practice in rural education.
- Make clear that you will work with LEAs in at least two states or territories. The Institute encourages you to include rural settings in different parts of the U.S. that have distinct demographic or cultural characteristics.
- Include information on race and ethnicity, rates of poverty, and other relevant details that show how you think about or define the rural education context (c.f., Beesley & Sheridan, 2017; Koziol et al., 2015).
- Use the [NCES \(2006\)](#) definitions of rural locales to make clear whether you are working in fringe, distant, or remote rural locales.¹² The Institute strongly encourages the inclusion of remote rural locales in at least some aspects of the focused program of research.
- If you plan to add sites over the course of your work, explain how they will be identified and recruited.

¹¹ You may include traditional LEAs, tribal education agencies, and/or organizations authorized by the state to support rural districts, e.g., regional education service agencies (RESAs) or boards of cooperative educational services (BOCES) that work with rural districts.

¹² See https://nces.ed.gov/pubs2007/ruraled/exhibit_a.asp.

b. Research Plan for the Focused Program of Research

Requirements: In order to be responsive and sent forward for scientific peer review, applications under the Rural Center topic **must** include a Research Plan section that describes the following:

- (i) Plans to carry out a research study on one or more major problems or issues in rural education identified by rural education stakeholders.
- (ii) Plans to develop and test a practical tool or strategy that will help rural educators overcome geographic or resource constraints in the conduct and use of research.
- (iii) Plans to develop a statistical or methodological product or procedure that can be used by rural education researchers to improve the designs of their studies, analyses of data, and interpretation of findings.

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 explain and strengthen the methodological rigor of your work.

- Organize the Research Plan into three subsections, one for each of the three components of the Center's focused program of research (see above Requirements).
- Explain how you see the three components of the focused program of research fitting together to answer your research questions and provide reliable, useful information and products for policymakers, practitioners, and researchers.
- Provide a timeline for the Center's focused program of research (include in the Project Narrative or [Appendix B](#)).

Study of a major problem or issue in rural education

- Explain the proposed research design for your study of a major problem or issue in rural education. The type of study you propose will depend upon your research question(s) and the current state of knowledge regarding the identified rural education problem or issue. You may propose any of the following types of studies:¹³
 - Exploratory: When there is not enough known about your issue or problem to address it, exploratory studies may be necessary to better understand the issue and its links to school and student outcomes overall and for specific subgroups. You may also be interested in identifying other factors that mediate or moderate the link to student outcomes.
 - Development/Innovation: When your issue or problem is well understood, but there is no specific approach or intervention (e.g., a practice, program, or policy) for addressing it, you could develop one based upon an underlying theory of change as to how student outcomes would be

¹³ Additional recommendations on what to include when describing the design and analysis of your studies are provided in the [Request for Applications for Education Research Grants](#) (84.305A) under Part III: Research Goals, which covers Exploration, Development and Innovation (including pilot tests), Efficacy and Replication (causal studies), and Measurement. If you are proposing to work in partnership with an SEA or LEA, you may wish to review the recommendations for describing your partnership and its work provided in the [Request for Applications for Partnerships & Collaborations Focused on Problems of Practice or Policy](#) (84.305H) under each of the two topics (the Researcher-Practitioner Partnership topic is similar to an Exploration study, and the State/Local Evaluation topic is similar to a causal study).

expected to improve. You should carry out one or more pilot tests to determine if an approach/intervention can be implemented as planned and whether it shows evidence of promise for improving student education outcomes.

- **Causal:** If there is evidence of promise for improving student education outcomes or if there is an unevaluated intervention being widely used in the schools or districts you are working with, you could evaluate its causal impact on student education outcomes using an experimental design, regression discontinuity design, or quasi-experimental design that would meet the What Works Clearinghouse standards for evidence.¹⁴ Causal studies should also assess the fidelity of implementation of the intervention and determine what the comparison group is receiving.
- **Continuous Improvement:** If your issue or problem might best be addressed through a process of ongoing improvement of a policy or program, you could work with school personnel to carry out a continuous improvement study using a series of short-term cycles of testing, feedback, and further revision with ongoing measurement of how each revision links to (correlates with) or impacts (causes) student education outcomes. You may also need to work with district or school personnel to identify and implement any changes in the education system that are necessary to support the success of the policy or program you are refining. See below for more detail about what to include in a continuous improvement study research plan.
- For each study you propose, provide a detailed description of:
 - The education problem(s) or issue(s) you intend to address.
 - The major research question(s) you intend to answer.
 - The sample to be studied.
 - The [student education outcomes](#) to be examined and any proximal measures you will use.
 - Your data collection procedures.
 - Your power analysis for any causal studies.
 - Your data analysis procedures.
 - The findings or products you will generate and their intended audiences or uses.
- If you propose a continuous improvement study, be sure you also include a detailed description of the following:
 - The short-term, intermediate and final outcome measures. Rapid implementation revision requires ongoing measurement with the resulting data made available quickly in order to inform the next step of the improvement cycle. Intermediate or final outcomes that can be measured

¹⁴ See the WWC's Procedures and Standards Handbook, Version 3.0 at <https://ies.ed.gov/ncee/wwc/Handbooks> (primarily Chapter III and Appendix D). Please note that the WWC is in the process of revising its regression discontinuity design standards <http://ies.ed.gov/ncee/wwc/documentsum.aspx?sid=258>.

during the short cycles should also be included (i.e., outcomes that can change relatively quickly).

- Procedures for collecting the data, including when data will be collected during each short cycle and how such data will feed into the revisions made during the following cycles.
- The continuous improvement process, including how you will study and interpret the data collected and identify any changes needed to improve implementation and outcomes. Make clear whether you are expecting to show correlations between implementation and outcomes or demonstrate causation. If the latter, be sure to include a power analysis in your research plan.
- The infrastructure and procedures you will put in place to ensure that the continuous improvement cycle is on track and that the improvement process continues to function as proposed.

Development and testing of a practical tool or strategy to help rural educators conduct and use research

- Explain your plans to develop and test a tool or strategy that will help rural educators overcome geographic or resource constraints in the conduct and use of research.
 - Explain the practical need for the tool or strategy and how it will contribute to the focused program of research.
 - Show how such a tool or strategy has been used elsewhere, if applicable.
 - Present an iterative plan for developing, testing, and improving the proposed tool or strategy. Be sure to include a discussion of:
 - The process for developing the tool or strategy.
 - The sample you will use to test your tool or strategy.
 - The [student education outcomes](#) you will examine and the proximal measures you will use to determine the effectiveness or usefulness of the tool or strategy.
 - The data collection procedures.
 - The data analysis procedures.
 - The process for refining the tool or strategy based on findings from testing.
 - The potential audiences/users for the tool or strategy and its application to rural education research more generally.

Development of a statistical or methodological procedure or product

- Explain your plans to develop methods and/or create statistical or methodological procedures or products (e.g., methods, guidelines or other methodological resources, software) that will help rural education researchers improve the designs of their studies, analyses of data, and interpretation of findings.
 - Explain the research needed for your new statistical and methodological procedure or product.

- Describe the process for developing the proposed statistical and methodological procedure or product and disseminating it to other researchers.
- Describe how you will involve other researchers to review the procedure or product for its helpfulness, accuracy, and usability.

c. Leadership and Outreach Activities

Requirements: In order to be responsive and sent forward for peer review, applications to the Rural Center topic **must** include a Leadership and Outreach section that describes:

- (i) The leadership and outreach activities of the Center.

Recommendations for a Strong Application: In order to address the above requirements, the Institute recommends that you include the following in your Leadership and Outreach Activities section.

- Describe how the work you are proposing will build the capacity of rural schools to use high-quality, scientific research to improve student education outcomes.
- Discuss your plan to maintain a website that describes the Rural Center's goals and activities and makes its research reports and other products readily available for download.
- Describe the activities you will undertake to communicate with policymakers, practitioners, researchers, the media, parents, and the general public about the Center's work.
- Describe your plans for meetings, conferences, and other events.
- Discuss your plans to use technology (e.g., webinars, podcasts, and social media) to broaden the reach of the Center at a relatively low cost.
- Explain how you will involve regional research partners who work in or near the rural education settings in which you propose to carry out your research. Discuss how this collaborative work will build infrastructure for continuing high quality rural education research after the Center ends.
- Describe any plans to involve external advisors to help guide and provide feedback on the Center's work.
- Discuss any opportunities you will provide for graduate students or early career researchers to contribute to Center activities and gain meaningful experience.

d. Management and Institutional Resources

Requirements: In order to be responsive and sent forward for peer review, applications under the Rural Center topic **must** have a Management and Institutional Resources section that describes the following:

- (i) A management plan for the Center.
- (ii) Institutional resources of the Center's primary institution and regional partner institutions.

Recommendations for a Strong Application: In order to address the above requirements, the Institute recommends that you include the following in your Center Management and Institutional 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 Center's work, and that you have a plan to manage the multiple stakeholders who will participate in the Center.

- Describe your capacity and plans to manage the Rural Center:
 - Discuss any prior experience managing a grant of this size, including coordinating the work of multiple partners; managing large budgets including subcontracts; running large meetings, conferences and videoconferences; conducting other national leadership activities; and annual reporting.
 - Make clear how all research institutions and education agencies that are involved in the Rural Center will work with one another, share information, and contribute to decision-making. It may be useful to include an organizational chart.
 - Discuss your plans and procedures for the overall management of these diverse stakeholders and activities, including coordination of communication and collaboration across settings and partner research institutions.
 - If you plan to add research sites or partners over the course of the Center, describe the process for identifying, recruiting, and establishing formal relationships with these sites and the timeline for this work.
- Describe the steps you will take to insure meaningful involvement from local education agencies and other stakeholders in the communities where you are working.
 - Describe how you will involve local education agency personnel in identifying key issues for research, advising you on how best to implement research, discussing the implications of findings, and identifying areas for follow-on research.
 - Explain whether your relationship with local education agency personnel is new for this application or extends a prior relationship.
- Include a signed Letter of Agreement in [Appendix D](#) from all **other research institutions** to be included in the Center's work as research partners.
 - To help build the capacity of rural schools and school districts to conduct and use research, the Institute recommends you include regional research institutions based in or near the settings where your work is taking place.
- Include a signed Letter of Agreement in Appendix D from all **local schools or education agencies** in which at least the initial research will take place (more settings can be added later).¹⁵
- If applicable, include a signed Letter of Agreement in Appendix D from any **state education agencies** that will play a role, either directly or in an advisory capacity, in the Center's work.

¹⁵ You may include tribal education agencies and/or organizations authorized by the state to support rural districts, e.g., regional education service agencies (RESAs) or boards of cooperative educational services (BOCES) that work with rural districts.

e. Personnel

Requirements: In order to be responsive and sent forward for peer review, applications under the Rural Center topic **must** include a Personnel section that describes the following:

- (i) The Principal Investigator and other key personnel who will lead the Rural Center.
- (ii) The key personnel from the research partner institutions that will be included in the Center.

Recommendations for a Strong Application: In order to address the above requirements, 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 the PI's qualifications.
 - Describe the PI's research experience and expertise, including his or her background in rural education research.
- Describe the PI's experience and success with leading a large grant that includes multiple partners and projects.
- Describe the roles, qualifications, and experience of other Center leadership and staff. Demonstrate that they collectively have the following:
 - Expertise in content areas relevant to rural education research;
 - The methodological expertise to carry out research in rural areas;
 - Experience working with rural school and district personnel;
 - Experience that is relevant to the required national leadership activities.
- Describe the personnel from regional partner institutions (at least one per state or territory in which the research is taking place) and their roles, qualifications, and experience with rural research.

(3) Awards

An application under the Rural Center topic **must** conform to the following limits on duration and cost:

Duration Maximum:

- **The maximum duration** of the Rural Center **is 5 years**. An application proposing a Center length of greater than 5 years will be deemed nonresponsive to the Request for Applications and will not be accepted for review.

Cost Maximum:

- **The maximum award** for a Rural Center **is \$10,000,000 (total cost = direct costs + indirect costs)**. An application proposing a budget higher than the maximum award will be deemed nonresponsive to the Request for Applications and will not be accepted for review.
 - At least **75 percent** of the total budget (direct costs + indirect costs) **must be allocated to the focused program of research**.

- At least **5 percent** of the maximum award (\$500,000) **must be reserved for supplementary studies** to be designed in collaboration with the Institute.

(4) **Data Management Plan**

Applications under the Rural Center topic must include a Data Management Plan (DMP) placed in [Appendix E](#). Your DMP (recommended length: no more than 5 pages) describes your plans for making the [final research data](#) from the proposed R&D Center 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 studies conducted by the R&D Center 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:

- 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 a data agreement that specifies conditions under which the data will be shared will be required.
- 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 [Narrative Budget Justification for the Center](#). The scientific peer review process will not include the DMP in the scoring of the scientific merit of the application. The Institute's Program Officers will be responsible for reviewing the completeness of the proposed DMP. If your application is being considered for funding based on the scores received during the scientific peer review process but your DMP is determined incomplete, you will be required to provide additional detail regarding your DMP (see [Pre-Award Requirements](#)).

3. Writing in Secondary Schools

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a) Purpose

Under this topic, the Institute is requesting applications to establish a **National Research and Development (R&D) Center on Writing in Secondary Schools (Writing Center)** to (1) describe how students develop writing skills across secondary school; and (2) understand how best to support all secondary students to become better writers and/or improve researchers' and teachers' ability to reliably and validly measure student writing quality.

Writing is sometimes labeled the "forgotten R." It is an essential skill for communication, self-expression, and learning content knowledge, yet it tends to receive less attention as a subject of instruction than reading and 'rithmetic' (math; College Board, April 2003). This is especially concerning given that the results from the most recent National Assessment of Educational Progress (NAEP) show that one out of five students in 8th and 12th grade score below the basic level in writing (National Center for Education Statistics [NCES], 2012). Students who score below the basic level are considered unable to address writing tasks appropriately and to communicate effectively. This means that approximately 20 percent of students in the United States finish high school without being able to effectively communicate their ideas, express themselves, and demonstrate their knowledge to other people through writing. African American and Latino students score lower on the NAEP writing assessment compared to Asian and White students, as do males compared to females, and students from urban and rural locales compared to students from suburban locales. Despite this reality, little research has been conducted on writing, especially writing in secondary schools (defined as middle and high schools, grades 6 through 12).

Students in elementary school begin the process of learning how to write by practicing foundational writing skills such as handwriting and spelling. As students master these skills and enter middle school, they are expected to write more often and with greater complexity (Alamargot, Plane, Lambert, and Chesnet, 2010; Hillocks, 2008). Students in secondary schools must consider the topic and audience of their composition as well as engage cognitive processes such as planning, reviewing/revising, and decision-making, all while balancing motivational and affective factors such as goals, predispositions, and attitudes toward writing (MacArthur and Graham, 2016). Balancing the cognitive demands of writing with motivation and affect may be an especially difficult task for secondary students, who are in a stage of life when they are rapidly developing their identities and managing their social relationships with parents and peers, as well as dealing with rapid physical and cognitive changes (Eccles and Roeser, 2011; Steinberg, 2005; Steinberg and Morris, 2001). While research suggests that self-efficacy beliefs about writing are positively associated with writing achievement (MacArthur and Graham, 2016; Pajares, 2003; Pajares and Valiante, 2006), it also shows that writing self-efficacy does not increase as children get older, suggesting that writing confidence is not nurtured as students enter middle and high school (Pajares, 2003).

Despite the obvious need for high-quality supports and interventions for secondary students as they learn how to write for college and career, the state of knowledge in this area is relatively weak. The What Works Clearinghouse released the Teaching Secondary Students to Write Effectively Practice Guide in 2016, but it offers only three recommendations for strategies to improve secondary students' writing, and only one is supported by strong evidence (Graham, Bruch, et al., 2016). Not only are there few interventions that have been found to be consistently associated with improving writing skills (Graham, Burch, et al., 2016; Graham, Harris, and Chambers, 2016), but the field of writing research is also lacking in theoretical foundations on how writing develops across secondary school (Applebee, 2000; Rogers, 2010; Santangelo, Harris, and Graham, 2016; Slomp, 2012) as well as how motivation and self-efficacy relate to writing skill (MacArthur and Graham, 2016; Pajares, 2003). Finally, while recent technology has made scoring certain features of writing more efficient (Shermis, Burstein, Elliot, Miel, and Folz, 2016), there are few valid, reliable, and easy-to-use measures of writing quality that can be employed by researchers and/or teachers (Graham, Harris, and Hebert, 2011; Graham, Hebert, and Harris, 2011).

The work of the Writing Center is divided into three parts:

- A focused program of research on how students develop writing skills across secondary school and how best to support all secondary students to become better writers and/or improve researchers' and teachers' ability to reliably and validly measure student writing quality;
- National leadership and outreach activities; and
- Supplemental activities.

For the **focused program of research**, the Writing Center is required to conduct **at least two studies**: (1) one or more Exploration Studies; and (2) one Development Study or one Measurement Study.

You **must** propose to conduct at least **one Exploration Study** that addresses at least one of the following research areas:

- Secondary data analyses of student writing data to answer questions such as what are the features of high-quality writing or the writing difficulties of subgroups of students;
- Longitudinal exploration of how writing skills develop over time, for all students of all skill levels; or
- Research examining the role of self-efficacy and motivation in predicting writing outcomes in secondary schools.

Additionally, applicants to the Writing Center topic **must** propose **at least one** of the following **Development or Measurement Studies**:

- Development and pilot testing of innovative intervention(s) to improve secondary students' writing; or
- Measurement work, including development and validation of measure(s) of writing quality for use by researchers, teachers, and/or students.

Applicants may propose to conduct the studies in any order they choose or concurrently. For example, applicants may choose to develop and validate measures of writing quality for use in the Exploration Study. Alternatively, applicants may use the Exploration Study to inform the development of an intervention or the development of a measure of writing quality.

Finally, the Writing Center will provide **national leadership and outreach** that will:

- Develop and disseminate products to researchers, teachers, and school leaders regarding findings;
- Support collaboration between the Writing Center and other researchers with interest and expertise in secondary writing; and
- Train scholars interested in researching student writing in secondary schools.

During the course of its work, the Writing Center is also expected to conduct **supplemental activities** (e.g., meetings, smaller-scale studies) that speak to other issues that are important within the context of the writing in secondary schools. The Writing Center will work cooperatively with the Institute to select

and design these supplemental activities to respond to pressing policy and practice needs within the topic covered by the Center. For this reason, the Institute does not expect a detailed plan for these supplemental activities in the application but does expect the budget to set aside 5 percent of the maximum grant award (\$250,000) for supplemental activities.

b) Requirements and Recommendations

Applications under the Writing Center topic **must meet the requirements set out under (1) Sample, Outcomes, and Setting; (2) Center Narrative; (3) Awards; and (4) 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 Center Narrative requirements.

Data Management Plan
A required plan for making the [final research data](#) from the proposed R&D Center accessible to others.

(1) Sample, Outcomes, and Setting

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

a. Sample

- Your research **must** focus on typically developing students. You may propose to examine subgroups of students, which may include students with disabilities, but such students may not be the primary focus of your study. The Institute supports research on students with disabilities from birth through high school through grant programs run by the Institute's National Center for Special Education Research (<https://ies.ed.gov/ncser/>).
 - Your sample **must** focus on students enrolled in grades 6-12, regardless of the grade configuration of their schools. You should include students from at least two grades, including at least one grade from middle school (grades 6-8) and one grade from high school (grades 9-12).
 - Your sample **must** include students who are low-achieving in writing, though these students do not need to comprise the entire sample.

b. Outcomes

- Your research **must** include measures of student writing.

c. Setting

- Your research **must** be conducted in [authentic 6-12 education settings](#) or on data collected from such settings.

(2) Center Narrative

The Center narrative (recommended length: no more than 35 pages) **must** include five sections – Significance, Research Plan, Leadership and Outreach Activities, Management and Institutional Resources, and Personnel.

a. Significance of the Focused Program of Research

Requirements: In order to be responsive and sent forward for scientific peer review, applications under the Writing Center topic **must** include a Significance section that provides the following:

- (i) Description of the major issues and research questions the Center will address.
- (ii) Conceptual framework that will guide the Center's 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 Center's work.

- Explain your understanding of the problems the Center is meant to address, propose an overall vision for the Center, and describe a coordinated set of research and leadership activities that you believe will produce the most benefit for secondary students' writing outcomes. The Institute particularly encourages applications that propose innovative strategies for engaging researchers and practitioners in the work of the Center and for communicating findings.
- Include a description of your conceptual framework and/or perspective and how that theoretical framework will guide the Center's work. Your conceptual framework should address what is currently known and not known about teaching students to be successful writers in secondary school. Identify areas of critical need and unanswered questions related to writing in secondary schools, and what role the Center will play in addressing them. Finally, describe how your conceptual framework will guide the research design, data collection and analysis plans described later in the proposal.
- In your literature review, consider the specific opportunities and challenges of writing in secondary schools,¹⁶ including, but not limited to: features of high-quality writing; developmental trajectories of writing skills; feedback from teachers; feedback from peers; motivation and self-efficacy; identity; content area and/or discipline; genre; technology, and the assessment of writing quality. The opportunities and challenges you address in your literature review should inform the Exploration Study and the Development or Measurement Study you include in your focused program of research.

b. Research Plan for the Focused Program of Research

Requirements: In order to be responsive and sent forward for scientific peer review, applications under the Writing Center topic **must** include a Research Plan section that describes the following:

¹⁶ In September, 2016, the Institute sponsored a Technical Working Group meeting to discuss what is known and not known about research on writing in secondary schools, and to identify potential gaps in the current body of knowledge on the topic. You may review the summary of the meeting here: <https://ies.ed.gov/ncer/whatsnew/techworkinggroup/>. Please note that this is one source of information and that you do not need to be restricted to or limited by the areas of critical need or unanswered questions that were identified in the Technical Working Group meeting.

- (i) The research design for each study (at least **one** Exploration Study and **either** a Development Study or a Measurement Study); and
- (ii) Data analysis procedures for each study.

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.

- The Institute encourages you to identify a diverse sample with regards to factors such as writing ability, socioeconomic status, race/ethnicity, and geographic location.

Exploration Study (required of all applicants)

- Describe the focus of your Exploration Study and provide empirical and/or theoretical support for the focus you choose. Your foci should include:
 - Exploratory work incorporating secondary data analyses of writing data to answer questions about the features of high-quality writing, writing difficulties of subgroups of students, etc.;
 - Longitudinal exploration of how one becomes a better writer, for all students across the continuum of skill level; and/or
 - Exploratory work examining the role of self-efficacy and motivation in writing in secondary schools.
- Describe the malleable factors you will study and how you expect them to be associated with specific student writing outcomes, as well as any mediators or moderators. Explain how the Exploration Study will contribute to the research gaps you have identified in your Significance section, and how it fits into your conceptual framework or perspective.
- Present a research plan for the Exploration Study that describes:
 - The population from which you will select your sample and how you will select your sample;
 - The measures you will use;
 - A data collection and detailed analysis plan; and
 - A timeline.
- Describe the quantitative and/or qualitative methods you will use. Make clear how each method will be used and for what purpose. For example, if you plan to collect writing samples from students, you should make clear who will provide the writing samples, what topics they will address, and how the writing samples will be assessed. You should describe the data collection instruments you will use and their reliability and validity. Finally, you should explain how you will analyze the data collected from your Exploration Study.
- The Institute recommends that you refer to the Requirements and Recommendations for a Goal 1 Exploration study in its [Education Research Grants Program \(CFDA 84.305A\)](#) to make sure your research plan is complete.

Development or Measurement Study (Applicants must do one or the other)

Development Study

- Clearly describe the current typical practice in secondary writing instruction and why this practice should be changed or improved.
- Describe the intervention you will develop and pilot-test and how you expect the intervention to improve writing outcomes for secondary students. The intervention you propose to develop may incorporate a variety of features which may be important for improving writing outcomes for secondary students.
- Explain your rationale for the features on which you choose to focus. If you choose to revise an existing intervention, justify the revision of the intervention including an explanation of why such a revision is preferable over developing a new intervention.
- Present a research plan that includes the following:
 - A clear statement of the problem or issue that your study will address;
 - Your theory of change for how your intervention, and its components, will lead to better student writing outcomes;
 - The method for developing the intervention (iterative development process);
 - The sample and setting and how they will be appropriate for meeting the research aims of the project;
 - A plan for a pilot study;
 - A detailed data analysis plan;
 - The measures of the feasibility, usability, and fidelity of implementation of the intervention;
 - The measures used to determine whether the intervention shows evidence of promise to impact student writing outcomes; and
 - A timeline.
- Discuss the expected practicality of the intervention, including why the intervention is likely to be accepted and implemented and how it can contribute to resolving the issue or problem that forms the basis of the project.
- The Institute recommends that you refer to the Requirements and Recommendations for a Goal 2 Development and Innovation study in its [Education Research Grants Program \(CFDA 84.305A\)](#) to make sure your research plan is complete for both the development work and the pilot study.

Measurement Study

- Explain your decision to develop a new measure(s) or revise an existing measure(s). The measure(s) may be for use by researchers, teachers, and/or other stakeholders, though you should justify the end user you choose.

- If you propose to develop a new measure(s), contrast the new measure(s) with current typical assessment practice and its identified shortcomings. If you propose to revise and validate an existing measure, describe the specific need for validating an existing measure. Explain how the Measurement Study will contribute to the research gaps you have identified in the Significance section, and how it fits into your conceptual framework or perspective.
- If you choose to propose a Measurement Study, you should present a research plan that explains:
 - The methods for developing and validating the measure(s), or modifying and validating an existing measure(s);
 - The practical applications of the measure(s) for education researchers and/or practitioners;
 - How psychometric evidence will be gathered to support the validity and reliability of the measure(s) for the prescribed purpose;
 - The sample and setting and how they will be appropriate for meeting the research aims of the project;
 - Any accommodations made for subgroups such as English learners or students with specific disabilities;
 - The characteristics, size, and analytic adequacy of the sample to be used in the study, including justification for exclusion and inclusion criteria; and
 - A timeline.
- Describe the iterative development processes that you will use to develop or revise the measure(s), including field testing procedures and processes for item revision. Include a detailed description of the validation activities and the types of evidence you will gather on the reliability and validity of the measure(s) for the specified purpose, populations, and contexts.
- Consider whether adaptation of the measure is needed for different contexts and purposes. You should plan to produce a technical manual that includes information about scoring and psychometric properties, as well as appropriate and inappropriate uses for the measure(s).
- Justify your choice of method for measuring writing quality (e.g. rubrics, indirect measures, direct measures, etc.).
- The Institute recommends that you refer to the Requirements and Recommendations for a Goal 5 Measurement study in its [Education Research Grants Program \(CFDA 84.305A\)](#) to make sure your research plan is complete.

c. Leadership and Outreach Activities

Requirements: In order to be responsive and sent forward for scientific peer review, applications to the Writing Center **must** describe the following:

- (i) The leadership and outreach activities of the Center.

Recommendations for a Strong Application: In order to address the above requirements, the Institute recommends that you include the following in your Leadership and Outreach Activities section.

- Describe the audiences you intend to reach and the various activities you will undertake to communicate with these audiences.
- Describe your plan to coordinate and collaborate with other researchers, including other researchers funded by the Institute, with interest and expertise in the area of secondary writing. In the event that the Institute is able to fund more than one R&D Center on Writing in Secondary Schools, the Institute will ask the Centers to plan to carry out periodic meetings to discuss their research plans and emerging findings, and to coordinate conference presentations and other dissemination activities.
- The Institute expects the Center to develop and disseminate products for teachers and other practitioners regarding the findings from the research. To use available resources most efficiently, you might consider taking advantage of annual conferences and other forums where researchers and practitioners already gather.
- Describe the Center website you will design, including its content and the audiences you intend to reach. The Institute also encourages applicants to use social media and electronic forms of communication (such as webinars, podcasts, and videos) to broaden the reach of the Center at a relatively low cost.
- In order to continue to build expertise in the field of secondary writing, the Institute encourages you to consider how the Center can train scholars interested in conducting research on writing in secondary schools. Describe the opportunities you will offer to potential trainees and how they will be recruited and selected.

d. Management and Institutional Resources

Requirements: In order to be responsive and sent forward for scientific peer review, applications under the Writing Center topic must describe the following:

- (i) The organizational structure of the Center and the management plan for how it will be run; and
- (ii) The resources to conduct the work of the Center, including the focused program of research, the supplemental activities, and the national leadership and outreach activities.

Recommendations for a Strong Application: In order to address the above requirements, the Institute recommends that you include the following in your Management and Institutional 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 Center's work, and that you have a plan to manage the multiple researchers who will participate in the Center.

- Describe your plans and procedures for the overall management of the Center and its diverse activities.
- Include an organization chart that shows how the major functions or activities of the Center will be organized and how key personnel will relate to one another.

- If the plans for the first year of grant activities include substantial work to be conducted in schools or other authentic education settings, document the availability and cooperation of the schools or other authentic education settings that will be required to carry out that work via a letter of agreement from the education organization(s) in [Appendix D](#) of your application.

e. Personnel

Requirements: In order to be responsive and sent forward for scientific peer review, applications under the Writing Center topic **must** describe the following:

- (i) The key personnel making up the Writing Center’s 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 completely implement the proposed Center activities.

- Describe the personnel at the primary applicant institution and any subaward institution along with any consultants. Competitive applications will have leadership and staff who collectively demonstrate:
 - Expertise in content areas relevant to writing in secondary schools;
 - The methodological and measurement expertise to carry out the proposed projects;
 - Sufficient experience working with education delivery settings to carry out the proposed projects;
 - Experience that is relevant to national leadership activities; and
 - Experience and capacity to manage a project of this size and type.
- The Institute encourages applicants to form multi-disciplinary teams and to consider scholars with different perspectives. Applicants are especially encouraged to include at least one team member with expertise in adolescent development in addition to the appropriate methodological expertise and content area expertise.
- Briefly describe the qualifications, roles, responsibilities, and percent of time (effort over the calendar year) to be devoted to the Center for all key personnel.

(3) Awards

An application under the Writing Center topic **must** conform to the following limits on duration and cost:

Duration Maximum:

- **The maximum duration** of a Writing Center **is 5 years**. An application proposing a Center length of greater than 5 years will be deemed nonresponsive to the Request for Applications and will not be accepted for review.

Cost Maximum:

- **The maximum award** for a Writing Center is **\$5,000,000 (total cost = direct costs + indirect costs)**. An application proposing a budget higher than the maximum award will be deemed nonresponsive to the Request for Applications and will not be accepted for review.
 - At least **75 percent** of the total budget (direct costs + indirect costs) **must be allocated to the focused program of research**.
 - At least **5 percent** of the maximum award (\$250,000) **must be reserved for supplementary studies** to be designed in collaboration with the Institute.

(4) Data Management Plan

Applications under the Writing Center topic must include a Data Management Plan (DMP) placed in [Appendix E](#). Your DMP (recommended length: no more than 5 pages) describes your plans for making the [final research data](#) from the proposed R&D Center 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 studies conducted by the R&D Center 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:

- 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 a data agreement that specifies conditions under which the data will be shared will be required.
- 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 [Narrative Budget Justification for the Center](#). The scientific peer review process will not include the DMP in the scoring of the scientific merit of the application. The Institute's Program Officers will be responsible for reviewing the completeness of the proposed 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. Exploring Science Teaching in Elementary School Classrooms

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a) Purpose

Under this topic, the Institute is requesting applications to establish a **National Research and Development (R&D) Center on Exploring Science Teaching in Elementary School Classrooms (Science Teaching Center)** to understand science teaching and its influence on student science achievement. The Science Teaching Center has two primary goals:

- To develop a more detailed understanding of the science teaching actions that promote student learning and either reduce or eliminate achievement gaps.
- To develop measures of these teaching actions that are accurate, reliable, and adequately aligned with the theoretical constructs researchers and other stakeholders seek to measure (Ball and Rowan, 2004; Blanton et al., 2003; Coggshall, 2007; Rowan et al., 2002).

Science literacy is necessary to navigate society and to compete in an increasingly global economy. Data suggest that most American students lack adequate science literacy (U.S. Department of Education, 2016). International assessments show that U.S. students lag behind other industrialized nations and even some developing nations in science (Provasnik et al., 2016; OECD, 2012; U.S. Department of Education, 2016). Moreover, some groups are not enrolled in science courses or employed in science professions at levels expected given their numbers in the population. For example, African American and Hispanic/Latino students are considered underrepresented in science because they constitute smaller percentages of science degree recipients and employed scientists and engineers than they do of the population (NSF, 2015). As the composition of the U.S. population changes, promoting science achievement and interest in science in students from groups underrepresented in science courses and professions is considered key to improving U.S. science achievement (National Academy of Sciences, et al., 2011; National Research Council, 2007) and is the focus of numerous initiatives (e.g., Change the Equation and Building Engineering and Science Talent (BEST)).

For students from low-income backgrounds and for students of certain linguistic and ethnic minority groups, achievement gaps appear in the earliest of grades and worsen as schooling continues. For instance, science achievement gaps before 3rd grade have been observed between African American and Hispanic/Latino students and White students (Morgan et al., 2016) and among socioeconomic groups (Kena et al., 2016). Data indicate some encouraging trends regarding the reduction of science achievement gaps across National Assessment of Educational Progress (NAEP) assessment years; however, science achievement gaps across family income levels and ethnic backgrounds persist (U.S. Department of Education, 2002; 2012).

Data also suggest predictors of student science outcomes appear in earlier grade levels. Prior experience in science learning, achievement, and interest during middle and high school years are significant factors in the selection of science as a college major and racial/ethnic gaps in persistence in a science major (e.g., Griffith, 2010; Price, 2010; Tai et al., 2006; Wang, 2013). Indeed, early elementary science-related achievement strongly predicts secondary science achievement (Morgan et al. 2016). In light of these

Teaching Actions

Observable, specific behaviors teachers engage in when presenting concepts of science, explaining science practices, and implementing course content from curriculum materials.

Examples include: kind, frequency, and duration of talk used by teachers (e.g., Grammer et al., 2013); body language and physical movement through space (e.g., Cortina et al., 2015; Alibali and Nathan, 2012); components of feedback to students (e.g., Ruiz-Primo and Li, 2013)

findings, education practitioners, researchers, and other stakeholders have called for increased efforts to reduce these achievement gaps by improving early science education (National Research Council, 2012; President's Council of Advisors on Science and Technology, 2010).

Research on the specific **teaching actions** that promote student interest and achievement in science is limited (Reynolds, 1992; Richardson, 2001). As with the teaching of other content areas, science teaching requires content knowledge, pedagogical content knowledge, and expertise to address a diverse range of student learning needs (National Academies of Sciences, Engineering, and Medicine, 2015). Translating these broad categories remains a substantial challenge for teacher training and professional development, particularly around instruction for students from low-income families and underrepresented groups. For teachers, science instruction is an area in especially urgent need for support and training, particularly in the elementary school grades, where teachers are less likely to have had coursework or degrees in scientific disciplines (National Academies of Sciences, Engineering, and Medicine, 2015) and report lacking the self-efficacy to teach science (Banilower et al., 2013; Dorph et al., 2011).

To address these research gaps and practice imperatives, the Institute intends to create a R&D Center on Science Teaching in Elementary School Classrooms (Science Teaching) focused on first- through third-grade classrooms that emphasize science instruction. The Institute seeks researchers who will integrate literature and methods from multiple disciplines—including those not often used in research on teaching, such as industrial-organizational psychology and cognitive science—to help advance teaching theory and practice.

The work of the Science Teaching Center is divided into three parts:

- A focused program of research on understanding science teaching actions that promote student learning in first through third grade classrooms and developing measures of these teaching actions that are accurate, reliable, and adequately aligned with the theoretical constructs researchers and other stakeholders seek to measure;
- National leadership and outreach; and
- Supplemental activities.

The Science Teaching Center will conduct three complementary, prospective studies as part of the **focused program of research** focusing on low-income and underrepresented students:

- **An Observational Study of elementary science teaching that describes teaching actions, student responses to these actions, and the correlations between these actions and student outcomes.** This study may use a range of methods from various disciplines and may focus on a number of classroom processes (e.g., whole class versus small group versus one-on-one teacher-student interactions, student projects and activities) to distill specific teaching actions and inform the Measurement Study and Longitudinal Study.
- **A Measurement Study to develop reliable and valid measures to capture the teaching actions in the Observational Study.**
- **A Longitudinal Study following at least one cohort of students over multiple school years to explore the relations between the specific observable teaching actions and student outcomes.** This study should use the measures developed from the Measurement study to describe the teaching actions students are exposed to and to track students' progress as they advance to later grades.

In addition, the Science Teaching Center will provide **national leadership and outreach** that will:

- Develop and disseminate products to researchers, teachers, and school leaders regarding findings;
- Support collaboration between the Science Teaching Center and other researchers with interest and expertise in elementary science teaching; and
- Train scholars interested in researching elementary science teaching.

During the course of its work, the Science Teaching Center is also expected to conduct **supplemental activities** (e.g., meetings, smaller-scale studies) that speak to other issues that are important within the context of science teaching. The Science Teaching Center will work cooperatively with the Institute to select and design these supplemental activities to respond to pressing policy and practice needs within the topic covered by the Center. For this reason, the Institute does not expect a detailed plan for these supplemental activities in the application but does expect the budget to set aside 5 percent of the maximum grant award (\$250,000) for supplemental activities.

b) Requirements and Recommendations

Applications under the Science Teaching Center topic **must meet the requirements set out under (1) Sample, Outcomes, and Setting; (2) Center Narrative; (3) Awards; and (4) 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 Center Narrative requirements.

Data Management Plan
A required plan for making the [final research data](#) from the proposed R&D Center accessible to others.

(1) Sample, Outcomes, and Setting

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

a. Sample

- Your sample **must** focus on typically developing students in the early elementary school grades (i.e., first, second, and/or third grade) and their teachers providing science instruction (physical, earth, and/or life sciences, or additional content areas that may be related to science teaching, such as reading or the other domains of STEM education, i.e., technology, engineering, and math. The Institute expects that the majority of students in the sample will be from low-income and/or from underrepresented groups.
 - Students with or at risk for disabilities may be included in your proposed research activities, but must not be the primary focus.¹⁷

¹⁷ The Institute supports research on students with or at risk for disabilities from birth through high school through grant programs run by the Institute's National Center for Special Education Research (<https://ies.ed.gov/ncser/>) .

b. Outcomes

- Your research **must** include measures of teaching (e.g., observable science teaching actions, classroom management and organization, and teacher science content knowledge) theorized to influence student outcomes.
- Your research **must** include measures of student knowledge of science concepts and practices, as well as other factors associated with persistence in science.

c. Setting

- Your research **must** be conducted in [authentic education settings](#) or on data collected from such settings.
- You may include external providers such as museums, science centers, environmental education centers, libraries, and industries but they must work in partnership with authentic education settings.

(2) Center Narrative

The Center narrative (recommended length: no more than 35 pages) for your application **must** include five sections – Significance, Research Plan, Leadership and Outreach Activities, Management and Institutional Resources, and Personnel.

a. Significance of the Focused Program of Research

Requirements: In order to be responsive and sent forward for scientific peer review, applications under the Science Teaching Center topic **must** include a Significance section that provides the following:

- (i) Description of the major issues and research questions the Center will address.
- (ii) Conceptual framework that will guide the Center's 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 Center's work.

- Explain your understanding of the problems the Center is meant to address. Identify areas of critical need and unanswered questions related to teaching science in the early elementary grades, and what role the Center will play in addressing them.
- Propose an overall vision for the Center. Identify the student and teacher populations you intend to study, and describe a coordinated set of research and leadership activities that you believe will produce the most benefit for elementary students' science education outcomes.
- Describe your theoretical framework, and how it will guide the Center's work. Address the state of the elementary science teaching field and what is currently known and not known about how to support science interest and learning in the early elementary school grades.

- Review the research literature that will inform the Center's work, and describe how your theoretical framework will guide the research design, data collection and analysis plans described later in the proposal. The literature review should touch on issues such as (but not limited to):
 - the area(s) of science that this research will focus on (i.e., physical, earth, and/or life sciences);
 - student motivation to learn science;
 - factors contributing to achievement gaps in science as students move through the educational system;
 - specific learning needs of the students from low-income families and underrepresented groups; and
 - assessment of student science learning in the early elementary grades.
- Discuss what role teachers and other practitioners will play in the Center. The Institute particularly encourages applications that propose innovative strategies for engaging researchers and practitioners in the work of the Center and for communicating findings.

b. Research Plan for the Focused Program of Research

Requirements: In order to be responsive and sent forward for scientific peer review, applications under the Science Teaching Center topic **must** include a Research Plan section that describes the following:

- (i) The research design for each study (an Observational Study, a Measurement Study, and a Longitudinal Study); and
- (ii) Data analysis procedures for each study.

Recommendations for a Strong Application: In order to address the above requirements, the Institute recommends that you do the following in your Research Plan section for all three studies to explain and strengthen the methodological rigor of your work.

- Researchers are strongly encouraged to incorporate methods from multiple disciplines, especially those not often utilized in research on teaching, such as methods from industrial-organizational psychology and cognitive science. Provide an overview of your research plan that explains the various methods and interdisciplinary perspectives you will include. Provide rationale for focusing on any specific classroom processes (e.g., whole class versus small group versus one-on-one teacher-student interactions, student projects and activities) to distill teaching actions.
- When choosing sites, the Institute encourages researchers to consider learning about the important policy choices states and localities may be making and capturing variations in program practices and operating conditions. For example, some states, such as California, Massachusetts, Indiana, South Carolina, and Virginia, have been noted for strong science standards starting in kindergarten (Lerner et al., 2012). Such potential research settings would not only be

expected to have science instruction in the earlier grades but they also might offer a greater range of science teaching practices in those grades.

- Describe how you will take into account different sources of variation (e.g., district-level versus state-level, single versus multiple jurisdiction variation due to early elementary science standards, curriculum, assessment, student/teacher population differences) in science teaching actions and its link to student outcomes.
- Discuss how plans for each study will intersect conceptually and logistically with the plans for the other studies. For example, explain which studies will be conducted sequentially, which studies will be conducted concurrently, and whether the studies will involve separate student cohorts or share the same student cohort.

Observational Study

- Explain how the Observation Study will contribute to the research gaps you have identified in the Significance section, and how it fits into your conceptual framework or perspective.
- Present a research plan for the Observational Study that describes the following:
 - The population from which you will select your sample and how you will select your sample;
 - The measures you will use;
 - A data collection and analysis plan (including power analyses); and
 - A timeline.
- Include information on the demographic characteristics of the sample and explain how they are appropriate for the Center's focus on typically developing students from low-income families and underrepresented groups.
- Discuss how research sites will be selected in order to capture adequate variation in science teaching actions and student science outcomes and develop predictive models of how students perform over time.
- Describe what the proposed sites are currently doing to promote early elementary science education and the teaching actions that will be the focus of the study.
- The Institute encourages researchers to consider potential moderators and mediators of student achievement in science such as student performance on assessments of elementary science knowledge, teacher knowledge and practices specific to various disciplines of science, and both teacher and student attitudes toward learning and science.
- The Institute recommends that you refer to the Requirements and Recommendations for a Goal 1 Exploration study in its [Education Research Grants Program \(CFDA 84.305A\)](#) to make sure your research plan is complete.

Measurement Study

- Provide a rationale for developing a new measure or revising an existing measure. Explain how the Measurement Study will contribute to the research gaps you have identified in the Significance section, and how it fits into your theoretical framework or perspective.
- Present a research plan that explains the following:
 - The methods for developing and validating the measure(s), or modifying and validating an existing measure(s);
 - The practical applications of the measure(s) for education researchers and practitioners;
 - How reliability and validity evidence will be gathered to support the utility of the measure(s) for the prescribed purpose;
 - The sample and setting and how they will be appropriate for meeting the research aims of the project;
 - The characteristics, size, and analytic adequacy of the sample to be used in the study, including justification for exclusion and inclusion criteria;
 - The data analytic approaches; and
 - A timeline.
- Describe the iterative development processes that you will use to develop or revise the measure(s), including plans for determining the administrative procedures for conducting the assessment (e.g., in-person data collection versus videotape, selection of class time to observe, length of time observed), field testing procedures, and processes for item revision.
- Include a detailed description of the validation activities and the types of evidence you will gather on the reliability and validity of the measure(s) for the specified purpose, populations, and contexts.
- The Institute encourages you to consider whether adaptation of the measure is needed for different contexts and purposes. You should plan to produce a technical manual that includes information about scoring and psychometric properties, as well as appropriate and inappropriate uses for the measure(s).
- The Institute recommends that you refer to the Requirements and Recommendations for a Goal 5 Measurement study in its [Education Research Grants Program \(CFDA 84.305A\)](#) to make sure your research plan is complete.

Longitudinal Study

- Explain how the Longitudinal Study will contribute to the research gaps you have identified in the Significance section, and how it fits into your conceptual framework or perspective.
- Present a research plan for The Longitudinal Study that describes the following:
 - The population from which you will select your sample and how you will select your sample;
 - The measures you will use;

- A data collection and analysis plan (including power analyses); and
- A timeline.
- Explain how many cohorts of students you expect to follow and for how long. Discuss your strategies for tracking and retaining students over the course of the study. Describe strategies to reduce attrition and plans for addressing missing data.
- Describe how you will track other changes in the schools/district that could affect science teaching actions.
- Discuss how you will account for potential moderators (e.g., family resources that support science learning). The Institute recommends that you refer to the Requirements and Recommendations for a Goal 1 Exploration study in its Education Research Grants Program (CFDA 84.305A) to make sure your research plan is complete.

c. Leadership and Outreach Activities

Requirements: In order to be responsive and sent forward for scientific peer review, applications to the Science Teaching Center topic **must** describe the following:

- (i) The leadership and outreach activities of the Center.

Recommendations for a Strong Application: In order to address the above requirements, the Institute recommends that you include the following in your Leadership and Outreach Activities section.

- Describe the audiences you intend to reach and the various activities you will undertake to communicate with these audiences.
- Describe your plan to coordinate and collaborate with other researchers, including other researchers funded by the Institute, with interest and expertise in the area of science teaching in elementary schools. In the event that the Institute is able to fund more than one R&D Center on Science teaching in Elementary School Classrooms, the Institute will ask the Centers to plan to carry out periodic meetings to discuss their research plans and emerging findings, and to coordinate conference presentations and other dissemination activities.
- The Institute expects the Center to develop and disseminate products for teachers and other practitioners regarding the findings from the research. To use available resources most efficiently, you might consider taking advantage of annual conferences and other forums where researchers and practitioners already gather. You might also consider interactive online meeting formats and use of social media.
- Describe the Center website you will design, including its content and the audiences you intend to reach. The Institute also encourages applicants to use social media and electronic forms of communication (such as webinars, podcasts, and videos) to broaden the reach of the Center at a relatively low cost.
- In order to continue to build expertise in the field of science teaching in elementary schools, the Institute encourages you to consider how the Center can train scholars interested in conducting research on science teaching in elementary schools. Describe the opportunities you will offer to potential trainees and how they will be recruited and selected.

d. Management and Institutional Resources

Requirements: In order to be responsive and sent forward for scientific peer review, applications under the Science Teaching Center topic must describe the following:

- (i) The organizational structure of the Center and the management plan for how it will be run.
- (ii) The resources to conduct the work of the Center, including the focused program of research, the supplemental activities, and the national leadership and outreach activities.

Recommendations for a Strong Application: In order to address the above requirements, the Institute recommends that you include the following in your Management and Institutional 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 Center work, and that you have a plan to manage the multiple researchers who will participate in the Center work.

- Describe your plans and procedures for the overall management of the Center and its diverse activities.
- Include an organization chart that shows how the major functions or activities of the Center will be organized and how key personnel will relate to one another.
- If the plans for the first year of grant activities include substantial work to be conducted in schools or other authentic education settings, document the availability and cooperation of the schools or other authentic education settings that will be required to carry out that work via a letter of agreement from the education organization(s) in [Appendix D](#) of your application.

e. Personnel

Requirements: In order to be responsive and sent forward for scientific peer review, applications under the Science Teaching Center topic **must** describe the following:

- (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 completely implement the proposed Center activities.

- Describe the personnel at the primary applicant institution and any subaward institution(s) along with any consultants. Competitive applications will have leadership and staff that collectively demonstrate the following:
 - Expertise in science teaching and learning in the elementary school grades;
 - The methodological and measurement expertise to carry out the proposed projects;

- Sufficient experience working with authentic education settings to carry out the proposed projects; and
- Experience that is relevant to national leadership activities.
- The Institute encourages applicants to form multi-disciplinary teams and to involve scholars with different perspectives, especially those not typically utilized in teaching research, such as industrial-organizational psychology and cognitive science. Discuss how their theoretical perspectives and experiences will be integrated into your research.
- Identify key state or local officials who will be involved in the study and what roles they will play (e.g., informing research questions, reviewing research protocols, providing access to elementary schools, discussing emerging findings). Include letters of support from key agencies or programs in Appendix D.
- Briefly describe the qualifications, roles, responsibilities, and percent of time (effort over the calendar year) to be devoted to the Center for all key personnel.

(3) Awards

An application under the Science Teaching Center topic **must** conform to the following limits on duration and cost:

Duration Maximum:

- **The maximum duration** of a Science Teaching Center **is 5 years**. An application proposing a Center length of greater than 5 years will be deemed nonresponsive to the Request for Applications and will not be accepted for review.

Cost Maximum:

- **The maximum award** for a Science Teaching Center **is \$5,000,000 (total cost = direct costs + indirect costs)**. An application proposing a budget higher than the maximum award will be deemed nonresponsive to the Request for Applications and will not be accepted for review.
 - At least **75 percent** of the total budget (direct costs + indirect costs) **must be allocated to the focused program of research**.
 - At least **5 percent** of the maximum award (\$250,000) **must be reserved for supplementary studies** to be designed in collaboration with the Institute.

(4) Data Management Plan

Applications under the Science Teaching Center topic must include a Data Management Plan (DMP) placed in [Appendix E](#). Your DMP (recommended length: no more than 5 pages) describes your plans for making the [final research data](#) from the proposed R&D Center 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 studies conducted by the R&D Center 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:

- 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 a data agreement that specifies conditions under which the data will be shared will be required.
- 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 [Narrative Budget Justification for the Center](#). The scientific peer review process will not include the DMP in the scoring of the scientific merit of the application. The Institute's Program Officers will be responsible for reviewing the completeness of the proposed 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](#)).

PART IV: COMPETITION REGULATIONS AND REVIEW CRITERIA

A. FUNDING MECHANISMS AND RESTRICTIONS

1. Mechanism of Support

The Institute intends to award only one cooperative agreement for each of the four R&D Center topics pursuant to this Request for Applications.

2. Funding Available

Although the Institute intends to support the R&D Center topics described in this announcement, all awards pursuant to this Request for Applications are contingent upon the availability of funds and the receipt of meritorious applications. The Institute makes its awards to the highest quality applications, as determined through scientific peer review.

Please attend to the maximums set for R&D Center length and budget for each topic. If you request a project length longer than the maximum or a budget higher than the maximum, your application will be deemed nonresponsive and will not be reviewed.

- **R&D Center on Improving Education Outcomes for Disadvantaged Students in Choice Schools**
The size of the award depends on the scope of work for the Center. The maximum duration of the award is 5 years and the maximum award for a 5-year Center is \$10,000,000 (total cost = direct + indirect).
- **R&D Center on Improving Rural Education**
The size of the award depends on the scope of work for the Center. The maximum duration of the award is 5 years and the maximum award for a 5-year Center is \$10,000,000 (total cost = direct + indirect).
- **R&D Center on Writing in Secondary Schools**
The size of the award depends on the scope of work for the Center. The maximum duration of the award is 5 years and the maximum award for a 5-year Center is \$5,000,000 (total cost = direct + indirect).
- **R&D Center on Exploring Science Teaching in Elementary School Classrooms**
The size of the award depends on the scope of work for the Center. The maximum duration of the award is 5 years and the maximum award for a 5-year Center is \$5,000,000 (total cost = direct + indirect).

The Institute expects the focused program of research to comprise at least 75 percent of a Center's activities depending on the cost and effort required to carry out the focused program of research, with the remainder of the budget devoted to supplemental activities, leadership and outreach activities, and any administrative activities not included in the focused program of research. You should allocate at least 5 percent of the Center's budget annually to the supplemental activities of the Center that will be determined cooperatively with the Institute after an award is made.

Although the plans of the Institute include the Education Research and Development Center topics described in this announcement, awards pursuant to this Request for Applications are contingent upon the availability of funds and the scientific merit of applications as determined by scientific peer review. The Institute will prioritize funding one Center under each topic.

3. Cooperative Agreements

Through the terms of the cooperative agreement, grantees will work with the Institute to plan work related to Supplemental and Leadership activities.

4. Special Considerations for Budget Expenses

Indirect Cost Rate

When calculating your expenses for research conducted in field settings, you should apply your institution's federally negotiated off-campus indirect cost rate. Questions about indirect cost rates should be directed to the U.S. Department of Education's Indirect Cost Group <http://www2.ed.gov/about/offices/list/ocfo/fipao/icgindex.html>.

Institutions, both primary grantees and subawardees, not located in the territorial United States cannot charge indirect costs.

Meetings and Conferences

If you are requesting funds to cover expenses for hosting meetings or conferences, please note that there are statutory and regulatory requirements in determining whether costs are reasonable and necessary. Please refer to OMB's Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards (Uniform Guidance), 2 CFR, [§200.432 Conferences](#).

In particular, federal grant funds cannot be used to pay for alcoholic beverages or entertainment, which includes costs for amusement, diversion, and social activities. In general, federal funds may not be used to pay for food. A grantee hosting a meeting or conference may not use grant funds to pay for food for conference attendees unless doing so is necessary to accomplish legitimate meeting or conference business. You may request funds to cover expenses for working meetings (e.g., working lunches); however, the Institute will determine whether these costs are allowable in keeping with the Uniform Guidance Cost Principles. Grantees are responsible for the proper use of their grant awards and may have to repay funds to the Department if they violate the rules for meeting- and conference-related expenses or other disallowed expenditures.

5. 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.

6. 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 E: Data Management Plan](#) as part of your Center 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 Center topic 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 D](#) 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 may 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 may ask you to provide updated documentation indicating that you still have permission to use the data set to conduct the proposed research during the project period.

- *Building off of existing studies* - You may propose studies that piggyback onto an ongoing study (i.e., that require access to subjects and data from another study). In such cases, the Principal Investigator of the existing study should be one of the members of the research team applying for the grant to conduct the new project.

In addition to obtaining evidence of access, the Institute strongly advises applicants to establish a written agreement, within 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 July 18, 2017. 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 R&D Center 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
- R&D Center Topic that you will address
- Brief description of the proposed R&D Center
- Name, institutional affiliation, address, telephone number and e-mail address of the Principal Investigator and any Co-Principal Investigators
- Name and institutional affiliation of any key collaborators and contractors
- Duration of the proposed R&D Center (attend to the duration maximum)
- Estimated total budget request (attend to the budget maximums)

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 2018 application is a resubmission (Item 8) and include the application number of the previous application (an 11-character alphanumeric identifier beginning

"R305" 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 A: Response to Reviewers](#). Revised and resubmitted applications will be reviewed according to this FY 2018 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 2018 application is a new application. In Appendix A, you should provide a rationale explaining why your FY 2018 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 2018 grant programs. However, you may submit a given application only once for the FY 2018 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 by 4:30:00 p.m., Washington, DC time on September 21, 2017 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/web/grants/support.html>.

After receiving the applications, Institute staff will review each application for [responsiveness](#) and [compliance](#) 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, 2018) 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 II R&D Center Requirements](#) and in [Part III: R&D Center Topic Requirements](#).

a) Significance of the Focused Program of Research

Does the applicant provide a compelling rationale for the significance of the Center as defined in the sections on the significance of the focused program of research?

b) Research Plan for the Focused Program of Research

Does the applicant meet the requirements and address the recommendations described in the sections detailing the methodological requirements for the focused program of research?

c) Plans for Other Center Activities

Does the description of the applicant's capacity to conduct supplemental and leadership activities demonstrate that the applicant has the ideas, experience, and capability to successfully carry-out such activities in cooperation with the Institute? Does the applicant propose meaningful leadership and outreach activities for the Center?

d) Management and Institutional Resources

Do the plans and procedures for the overall management of the Center indicate that the applicant has the capacity to efficiently and successfully complete the proposed research, dissemination, and leadership activities? 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 proposed Center activities?

e) Personnel

Does the description of the personnel make it apparent that the Principal Investigator/Center Director and other key personnel possess the appropriate training and experience and will commit sufficient time to competently implement the proposed research?

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; 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 directly to the Institute after the application package is submitted.**

B. GRANT APPLICATION PACKAGE

The Application Package for this competition (84-305C2018) 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).¹⁸

1. Date Application Package is Available on Grants.gov

The Application Package will be available on <http://www.grants.gov/> by July 18, 2017.

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 and Development Center 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 and Development Center program, you must download the Application Package marked

- Education Research and Development Center CFDA 84.305C

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 and Development Center competition.

See [Part VI Submitting Your Application](#), for a complete description of the forms that make up the application package and directions for filling out these forms.

C. GENERAL FORMATTING

For a complete application, you must submit the following as individual attachments to the R&R forms that are contained in the application package for this competition in Adobe Portable Document Format (PDF):

- Center Summary/Abstract;

¹⁸ 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.

- Center Narrative; Appendix A: Response to Reviewers (Required for Resubmissions); Appendix B: Supplemental Charts, Tables, and Figures (Optional); Appendix C: Examples of Intervention or Assessment Materials (Optional); Appendix D: Letters of Agreement; and Appendix E: Data Management Plan (Required), 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 Center budget; and
- Subaward Budget(s) that has (have) been extracted from the R&R Subaward Budget (Fed/Non-Fed) Attachment(s) Form, if applicable.

Information about formatting all of these documents except the Subaward budget attachment (see [Part VI.E.6](#)) is provided below.

1. Page and Margin Specifications

For all Institute research grant applications, a “page” is 8.5 in. x 11 in., on one side only, with 1-inch margins at the top, bottom, and both sides.

2. Page Numbering

Add page numbers using the header or footer function and place them at the bottom or upper right corner for ease of reading.

3. Spacing

We recommend that you use single spacing.

4. Type Size (Font Size)

Small type size makes it difficult for reviewers to read the application. To ensure legibility, we recommend the following:

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

As a practical matter, if you use a 12-point Times New Roman font without compressing, kerning, condensing, or other alterations, the application will typically meet these recommendations. When converting documents into PDF files, you should check that the resulting type size is consistent with the original document.

5. Graphs, Diagrams, and Tables

We recommend that you use black and white in graphs, diagrams, tables, and charts. If color is used, you should ensure that the material reproduces well when printed or photocopied in black and white. Text in figures, charts, and tables, including legends should be readily legible.

D. PDF ATTACHMENTS

The information you include in these PDF attachment provides the majority of the information on which reviewers will evaluate the application.

1. Center Summary/Abstract

a) Submission

You must submit the Center 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 Center Summary/Abstract be no more than one page.

c) Content

The center summary/abstract should include the following:

- **Title** of the proposed Center,
- The **topic** under which the applicant is applying (e.g., “R&D Center on Writing in Secondary Schools”),
- Brief description of the focused program of research, including a summary of each proposed study, and
- A list of the key Center personnel.

Please see <http://ies.ed.gov/ncer/projects> for examples of the content to be included in your center summary/abstract.

2. Center Narrative

a) Submission

You must submit the Center 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 Center Narrative be no more than 35 pages. To help reviewers locate information and conduct the highest quality review, you should 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 Center Narrative **must** include five sections in order to be compliant with the requirements of this Request for Applications: (1) Significance of the Focused Program of Research, (2) Research Plan for the Focused Program of Research, (3) Leadership and Outreach Activities, (4) Management and Institutional Resources, and (5) Personnel. Information to be included in each of these sections is detailed in [Part II R&D Center Requirements](#) and [Part III: R&D Center Topic Requirements](#). The information you include in each of these five sections will provide the majority of the information on which reviewers will evaluate the application.

3. Appendix A: Response to Reviewers (Required for Resubmissions)

a) Submission

If your application is a resubmission you must include Appendix A. If your application is one that you consider to be new but that is similar to a previous application, you should include Appendix A. Include Appendix A after the center 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 three pages.

c) Content

Use Appendix A 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 A 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 A.

4. Appendix B: Supplemental Charts, Tables, and Figures (Optional)

a) Submission

If you choose to have an Appendix B, you must include it following Appendix A (if included), which follows the center 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 B be no more than 15 pages.

c) Content

You may include figures, charts (e.g., a timeline for your research project), or tables that supplement the center narrative as well as examples of measures (e.g., individual items, tests, surveys, observation and interview protocols) used to collect data for your project in Appendix B. These are the only materials that should be included in Appendix B.

5. Appendix C: Examples of Intervention or Assessment Materials (Optional)

a) Submission

If you choose to have an Appendix C, you must include it following the other Appendices included at the end of the center 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 10 pages.

c) Content

In Appendix C, 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 C.

6. Appendix D: Letters of Agreement (Optional)

a) Submission

If you have an Appendix D, you must include it following the other Appendices included at the end of the center 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 D.

c) Content

Include in Appendix D 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 may be included in Appendix D; all other materials will be removed prior to review of the application.

7. Appendix E: Data Management Plan (Required)

a) Submission

You **must** include Appendix E following the other Appendices included at the end of the center 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 E be no more than five pages.

c) Content

Include in Appendix E your Data Management Plan (DMP). The [content of the DMP](#) is discussed in Part II.A.5: Dissemination. These are the only materials that should be included in Appendix E.

8. 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 center narrative.

9. 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.

10. 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 (this 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 his/her 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 biosketch template. If you use your own format, you will need to provide this information in a separate table.

11. 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/Consortium 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 center 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 center and its subawards, if applicable. The budget justification should correspond to the itemized breakdown of center 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 center. 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 center 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.4 Special Considerations for Budget Expenses](#)). When calculating your indirect costs on expenses for research conducted in field settings, you should apply your institution's federally negotiated off-campus indirect cost rate.

If your institution does not have a federally negotiated indirect cost rate, you should consult a member of the Indirect Cost Group (ICG) in the U.S. Department of Education's Office of the Chief Financial Officer <http://www2.ed.gov/about/offices/list/ocfo/fipao/icgreps.html> to help you estimate the indirect cost rate to put in your application.

PART VI: SUBMITTING YOUR APPLICATION

This part of the RFA describes important submission procedures you need to be aware of to ensure your application is received on time (no later than 4:30:00pm Washington, DC time on September 21, 2017) and accepted by the Institute.

Any questions that you may have about electronic submission via Grants.gov should first be addressed to the Grants.gov Support Center at support@grants.gov or call 1-800-518-4726. Grants.gov also provides a number of resources to support applicants with the electronic submission procedures (see <http://www.grants.gov/web/grants/support.html>). The Institute also offers webinars on the application submission process <http://ies.ed.gov/funding/webinars/index.asp>.

A. MANDATORY ELECTRONIC SUBMISSION OF APPLICATIONS AND DEADLINE

Applications must be submitted electronically through the internet using the software and application package provided on the Grants.gov web site: <http://www.grants.gov/>. Applications must be received (fully uploaded and processed by Grants.gov) no later than 4:30:00 pm Washington, DC time on September 21, 2017. **Applications received by Grants.gov after the 4:30:00 pm Washington DC time application deadline will be considered late and will not be sent forward for scientific peer review.**

Electronic submission 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 through Grants.gov, your institution must be registered with Grants.gov (<http://www.grants.gov/web/grants/register.html>).

Grants.gov registration involves many steps including prior registration in the System for Award Management (SAM: formerly known as the Central Contractor Registry or CCR) at <http://www.sam.gov>. Grants.gov recommends that your institution begin the registration process at least 4 weeks prior to the application deadline date.

1. Register Early

Registration involves multiple steps (described below) and takes at least 3 to 5 business days, or as long as 4 weeks, to complete. You must complete all registration steps to allow a successful application submission via Grants.gov. You may begin working on your application while completing the registration process, but you will not be permitted to submit your application until all of the registration steps are complete.

2. How to Register

- Choose "Organization Applicant" for the type of registration.
- Complete the DUNS OR DUNS+4 Number field.
 - If your organization does not already have a DUNS Number, you can request one online by using the form at the Dun & Bradstreet website <http://fedgov.dnb.com/webform> or by phone (866-705-5711).
 - To submit your application successfully, the DUNS number in your application must be the one that was used when you registered as an Authorized Organization Representative (AOR) on Grants.gov. This DUNS number is typically the same number used when your organization registered with the SAM. **If you don't enter the same DUNS number as the DUNS you registered with, Grants.gov will reject your application.**
- Register with the System for Award Management (SAM) <http://www.sam.gov>.
 - You can learn more about the SAM and the registration process for grant applicants in the SAM user guide: https://www.sam.gov/sam/transcript/Quick_Guide_for_Grants_Registrations_v1.7.pdf
 - For further assistance, please consult the tip sheet that the U.S. Department of Education has prepared for help with the SAM system <http://www2.ed.gov/fund/grant/apply/sam-faqs.html>.
 - Registration with the SAM may take a week to complete, but could take as many as several weeks to complete, depending on the completeness and accuracy of the data entered into the SAM database by an applicant. **The SAM registration must be updated annually.**
 - Once your SAM registration is active, it will take 24 to 48 hours for the information to be available in Grants.gov. You will only be able to submit your application via Grants.gov once the SAM information is available in Grants.gov.
- Create your Username & Password
 - Complete your AOR profile on Grants.gov and create your username and password. You will need to use your organization's DUNS Number to complete this step. <https://apply07.grants.gov/apply/OrcRegister>.
- AOR Authorization
 - The E-Business Point of Contact (E-Biz POC) at your organization must login to Grants.gov to confirm you as an AOR. Please note that there can be more than one AOR for your organization. In some cases the E-Biz POC is also the AOR for an organization.

C. 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. Washington, DC time on the deadline date as determined by Grants.gov. As an example, if you begin the submission process at 4:00:00 p.m. Washington, DC time on the deadline date, and Grants.gov rejects the application at 4:15:00 p.m. Washington, DC 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. Washington, DC time deadline. **You are strongly encouraged to begin the submission process at least 3 to 4 days before the deadline date to ensure a successful, on-time submission.**

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. Washington DC 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. Washington, DC 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 about error messages on its For Applicants page

<http://www.grants.gov/web/grants/applicants.html>.

- Grants.gov FAQ
<http://www.grants.gov/web/grants/applicants/encountering-error-messages.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. Washington DC time, then the application submission is successful and on-time.

Note: You should not rely solely on e-mail 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., 305C), the fiscal year for the submission (e.g., 18 for fiscal year 2018), and finally four digits unique to the application, for example R305C18XXXX. If the application was received after the closing date/time, this email will also indicate that the application is late and will not be given further consideration.

Note: The Institute strongly recommends that you begin the submission process at least 3 to 4 days in advance of the closing date to allow for a successful and timely submission.

3. Late Applications

If your application is submitted after 4:30:00 p.m. Washington, DC 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. Grants.gov has several resources that can help you resolve problems such as these.

- <http://www.grants.gov/web/grants/applicants/applicant-faqs.html>
- <http://www.grants.gov/web/grants/applicants/encountering-error-messages.html>

If after consulting these resources you still experience problems submitting an application through Grants.gov, contact the Grants.gov Support Desk (support@grants.gov, <http://www.grants.gov/web/grants/support.html>, 1-800-518-4726) to obtain a Case Number (e.g., 1-12345678) that you should keep as a record of the problem(s) you experienced.

If the Grants.gov Support Desk determines that the Grants.gov website was inaccessible due to technical problems on the Grants.gov website, and determines that this affected your ability to submit the application by the submission deadline, you may petition the Institute to review your application by emailing 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.**

D. TIPS FOR WORKING WITH GRANTS.GOV

The Institute strongly encourages you to use the “Check Application for Errors” button at the top of the grant application package to identify errors or missing required information that can prevent an application from being processed and sent forward for review.

Note: You must click the “Save and Submit” button at the top of the application package to upload the application to the Grants.gov website. The “Save and Submit” button will become active only after you have used the “Check Package for Errors” button and then clicked the “Save” button. Once the “Save and Submit” button is clicked, you will need to enter the user name and password that were created upon registration with Grants.gov.

1. Working Offline

When you download the application package from Grants.gov, you will be working offline and saving data on your computer. You will need to logon to Grants.gov to upload the completed application package and submit the application.

2. Connecting to the Internet

- Using a dial-up connection to upload and submit an application can take significantly longer than using a high-speed connection to the internet (e.g., cable modem/DSL/T1). Although times will vary depending upon the size of the application, it can take a few minutes to a few hours to complete the grant submission using a dial-up connection.
- 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 it is recommended you have the latest version when using Grants.gov. Legacy versions of these web browsers may be functional, but you may experience issues.
- For additional information or updates, please see the Grants.gov Browser Information in the Applicant FAQs: <http://www.grants.gov/web/grants/applicants/applicant-faqs.html#browser>.

3. Software Requirements

You will need Adobe software to read and complete the application forms for submission through Grants.gov. Grants.gov supports Adobe Reader version 9 through 11 and certain versions of Adobe Reader DC <http://www.grants.gov/web/grants/applicants/adobe-software-compatibility.html>.

4. Attaching Files

The forms included in the application package provide the means for you to attach Adobe Portable Document Format (PDF) files. **You must attach read-only, non-modifiable PDF files**; any other file attachment will not be reviewed.

If you include scanned documents as part of a PDF file (e.g., Letters of Agreement in [Appendix D](#)), scan them at the lowest resolution to minimize the size of the file and expedite the upload process. PDF files that contain graphics and/or scanned material can greatly increase the size of the file attachments and can result in difficulties opening the files. The average discretionary grant application package totals 1 to 2 MB; therefore, **check the total size of your application package before you attempt to submit it**. Very large application packages can take a long time to upload, putting the application at risk of being received late and therefore not accepted by the Institute.

PDF files included in the application **must** be

- **In a read-only, non-modifiable format.**
- **Individual files** (attachments that contain files within a file, such as PDF Portfolio files, or an interactive or fillable PDF file will not be read).

- **Not password protected.**
- **Given a file name that**
 - **Is unique** - Grants.gov cannot process an application that includes two or more file attachments that have the same name.
 - **Has no more than 50 characters.** Uploaded file names must be fewer than 50 characters, and, in general, applicants should not use any special characters.
 - 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.

5. Workspace

In addition to the Adobe form application package, Grants.gov offers a new option called Workspace for application completion and submission. Workspace allows a team of registered Grants.gov applicants to use a shared online space to complete and submit an application. See <https://www.grants.gov/web/grants/applicants/workspace-overview.html> for more information.

E. 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 (84-305C2018). 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 Center topic; 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 provides important information that is used by the Institute to screen applications for responsiveness to the competition requirements and for assignment to the appropriate scientific peer review panel. **It is critical that you complete this information completely and accurately or the application may be rejected as nonresponsive or assigned inaccurately for scientific review of merit.**

- Item 4a: Federal Identifier. **Enter information in this field if this is a Resubmission.** If this application is a revision of an application that was submitted to an Institute grant competition in a prior fiscal year (e.g., FY 2017) that received reviewer feedback, then this application is considered a “Resubmission” (see Item 8 Type of Application). You should **enter the PR/Award number that was assigned to the prior submission (e.g., R305XXXXXX) in this field.**
- Item 4b: Agency Routing Number. **Enter the code for the topic that the application addresses in this field.** Applications to the Education Research and Development Center (CFDA 84.305C) program must be submitted to a particular topic (see [Part III: R&D Center Topic Requirements](#) for additional information).

Topic	Code
Improving Education Outcomes for Disadvantaged Students in Choice Schools	NCER-Choice
Improving Rural Education	NCER-Rural
Writing in Secondary Schools	NCER-Writing
Exploring Science Teaching in Elementary School Classrooms	NCER-Science Teaching

It is critical that you use the appropriate code in this field and that the code shown in this field agrees with the information included in the application abstract. Indicating the correct code facilitates the appropriate processing and review of the application. Failure to do so may result in delays to processing and puts your application at risk for being identified as nonresponsive and not considered for further review.

- 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 III: R&D Center Topic Requirements](#) or the list of Program Officers in [Part VI.H](#)) before submitting the application. Use the drop down menus where they are provided.

Organizational DUNS. Enter the DUNS or DUNS+4 number of the applicant organization. A **Data Universal Numbering System (DUNS)** number is a unique 9-character identification number provided by the commercial company Dun & Bradstreet (D&B) to identify organizations. If your institution does not have a DUNS number and therefore needs to register for one, a DUNS number can be obtained through the Dun & Bradstreet website:
<http://fedgov.dnb.com/webform/displayHomePage.do>.

Note: The DUNS number provided on this form must be the same DUNS number used to register on Grants.gov (and the same as the DUNS number used when registering with the SAM). **If the DUNS number used in the application is not the same as the DUNS number used to register with Grants.gov, the application will be rejected with errors by Grants.gov.**

Person to Be Contacted on Matters Involving this Application. Enter all of the information requested, including the name, telephone and fax numbers, and email address of the person to be contacted on matters involving this application. The role of this person is primarily for communication purposes on the budgetary aspects of the project. As an example, this may be the contact person from the applicant institution’s office of sponsored projects. Use the drop down menus where they are provided.

- Item 6

Employer Identification (EIN) or (TIN). Enter either the Employer Identification Number (EIN) or Tax Identification Number (TIN) as assigned by the Internal Revenue Service. If the applicant organization is not located in the United States, enter 44-4444444.

- Item 7

Type of Applicant. Use the drop down menu to select the type of applicant. If Other, please specify.

Small Business Organization Type. If “Small Business” is selected as Type of Applicant, indicate whether or not the applicant is a “Women Owned” small business – a small business that is at least 51% owned by a woman or women, who also control and operate it. Also indicate whether or not the applicant is a “Socially and Economically Disadvantaged” small business, as determined

by the U.S. Small Business Administration pursuant to section 8(a) of the Small Business Act U.S.C. 637(a).

- Item 8

Type of Application. Indicate whether the application is a "New" application or a "Resubmission" of an application that was submitted under a previous Institute competition and received reviewer comments. Only the "New" and "Resubmission" options apply to Institute competitions. Do not select any option other than "New" or "Resubmission."

Submission to Other Agencies. Indicate whether or not this application is being submitted to another agency or agencies. If yes, indicate the name of the agency or agencies.

- Item 9

Name of Federal Agency. Do not complete this item. The name of the federal agency to which the application is being submitted will already be entered on the form.

- Item 10

Catalog of Federal Domestic Assistance Number. Do not complete this item. The CFDA number of the program competition to which the application is being submitted will already be entered on the form. The CFDA number can be found in the Federal Register Notice and on the face page of the Request for Applications.

- Item 11

Descriptive Title of Applicant's Project. **Enter a distinctive, descriptive title for the R&D Center.** 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 R&D Center and the proposed end date of the R&D Center. The start date must not be earlier than July 1, 2018, which is the Earliest Anticipated Start Date listed in this Request for Applications, and must not be later than September 1, 2018. The end date is restricted based on the duration maximums for the R&D Center topic selected (see [Part III: R&D Center Topic Requirements](#)).

- Item 13

Congressional District of Applicant. For both the applicant and the project, enter the Congressional District in this format: 2-character State Abbreviation and 3-character District Number (e.g., CA-005 for California's 5th district, CA-012 for California's 12th district). Grants.gov provides help for finding this information <http://www.grants.gov/web/grants/applicants/applicant-faqs.html> under "How can I find my congressional district code?" If the program/project is outside the U.S., enter 00-000.

- Item 14

Project Director/Principal Investigator Contact Information. Enter all of the information requested for the Project Director/Principal Investigator, including position/title, name, address (including county), organizational affiliation (e.g., organization, department, division, etc.), telephone and fax numbers, and email address. Use the drop down menus where they are provided.

- Item 15

Estimated Project Funding

- Total Federal Funds Requested. Enter the total Federal funds requested for the entire project period. The total federal funds requested must not exceed the cost maximums for the topic selected (see [Part III](#)).
- 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 center; (2) specify the role key staff will serve; and (3) provide contact information for each senior/key person identified. The form also requests information about the highest academic or professional degree or other credentials earned and the degree year. This form includes a "Credential/Agency Log In" box that is optional.

This form also provides the means for attaching the Biographical Sketches of senior/key personnel as PDF files. This form will allow for the attachment of a total of 40 biographical sketches: one for the project director/principal investigator and up to 39 additional sketches for senior/key staff. See [Part V.D.10](#) for information about content and recommended formatting and page length for the biographical sketches. The persons listed on this form should be the same persons listed in the Personnel section of the Center 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 [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 an 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:

- Center Summary/Abstract,
 - Center 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

Center Summary/Abstract. Attach the Center 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

Center Narrative. Create a single PDF file that contains the Center Narrative and Appendix A (required for resubmissions), Appendix B (optional), Appendix C (optional), Appendix D (Optional), and Appendix E (required). 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.8](#) for information about content and recommended formatting and page length for this PDF file.

- Item 10.

Facilities and Other Resources. The Institute does not want an attachment here. Explanatory information about facilities and other resources must be included in the Resources Section of the 35-page Center Narrative for the application and may also be included in the Narrative Budget Justification. In the center 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 D](#).

- Item 11.

Equipment. The Institute does not want 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.9](#) 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 Center topic selected (see [Part III R&D Center Topic Requirements](#)) to ensure the application will be deemed responsive and sent forward for scientific peer review.

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 center as determined by the Award Duration Maximums for the relevant Center topic** (see [Part III R&D Center Topic 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. If any personnel intend to donate time, this donated time must be listed in the budget and budget narrative and described as cost sharing. The Institute does not require or request such cost sharing nor consider it in award decisions but does require that it be documented. Personnel proposing to donate time must demonstrate that they have such time available.

- 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, the Non-Federal dollars) for each indirect cost type.

Total H. Indirect Costs. This total will auto calculate.

Cognizant Agency. Enter the name of the Federal agency responsible for approving the indirect cost rate(s) for the applicant. Enter the name and telephone number of the individual responsible for negotiating the indirect cost rate. If a Cognizant Agency is not known, enter "None."

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.11](#)) 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 center.

Cumulative Budget. This section will auto calculate all cost categories for all budget periods included.

Final Note: The total grant budget cannot exceed the maximum grant award for the R&D Center topic being applied under, as listed in the table below. Applications with budgets and durations greater than the maximums listed below will not be forwarded for review.

Topic	Maximum Grant Duration	Maximum Grant Award
Improving Education Outcomes for Disadvantaged Students in Choice Schools	5 years	\$10,000,000
Improving Rural Education	5 years	\$10,000,000
Writing in Secondary Schools	5 years	\$5,000,000
Exploring Science Teaching in Elementary School Classrooms	5 years	\$5,000,000

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).

F. SUMMARY OF REQUIRED 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	Part VI.E.6	Form provided in Grants.gov application package. Use this form to <i>extract and attach</i> a subaward budget(s).
SF 424B Assurances – Non-Construction Programs Grants.gov Lobbying form Disclosure of Lobby Activities – Standard Form LLL	Part VI.E.7	Forms provided in Grants.gov application package
Center Summary/Abstract	Part V.D.1	Add as an attachment (PDF file) using Item 7 of the "Other Project Information" form
Center Narrative and Appendices <ul style="list-style-type: none"> • Narrative • Appendix A • Appendix B • Appendix C • Appendix D • Appendix E 	Part V.D.2-7	The Center Narrative, Appendix A (required for resubmissions), Appendix B, Appendix C, Appendix D, and Appendix E (required for all applications) must ALL be included together in one PDF file and attached at Item 8 of the "Other Project Information" form.
Bibliography and References Cited	Part V.D.8	Add as an attachment (PDF file) using Item 9 of the "Other Project Information" form.
Research on Human Subjects Narrative, if applicable	Part V.D.9	Add as an attachment (PDF file) using Item 12 of the "Other Project Information" form.
Biographical Sketches of Senior/Key Personnel (including Current and Pending Support)	Part V.D.10	Add each as a separate attachment (PDF file) using the "Senior/Key Person Profile (Expanded)" form.
Narrative Budget Justification	Part V.D.11	Add as an attachment (PDF file) using <i>Section K – Budget Period 1</i> of the "Budget (Total Federal + Non-Federal)" form.

G. 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, is the correct topic code 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 Lobby Activities – Standard Form LLL (if applicable)
Have each of the following items been attached as PDF files in the correct place?	
	Center Summary/Abstract, using Item 7 of the "Other Project Information" form
	Center Narrative, and where applicable, Appendix A (required for resubmissions), Appendix B (optional), Appendix C (optional), Appendix D (optional), and Appendix E (required) 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, including Current and Pending Support
	Narrative Budget Justification, using Section K – Budget Period 1 of the "Budget (Total Federal + Non-Federal)" form
	Budget (Total Federal + Non-Federal): Sections A & B; Sections C, D, & E; Sections F – K for the Subaward(s), using the "R&R Subaward Budget (Federal/Non-Federal) Attachment(s)" form, as appropriate, that conforms to the Award Duration and Budget maximums for the Center
Have the following actions been completed?	
	The correct PDF files are attached to the proper forms in the Grants.gov application package
	The "Check Package for Errors" button at the top of the grant application package has been used to identify errors or missing required information that prevents an application from being processed
	The "Track My Application" link has been used to verify that the upload was fully completed and that the application was processed and validated successfully by Grants.gov before 4:30:00 p.m., Washington, DC time on the deadline date

H. PROGRAM OFFICER CONTACT INFORMATION

Please contact the Institute's Program Officers with any questions you may have about your application. Program Officers function as knowledgeable colleagues who can provide substantive feedback on your research idea, including reading a draft of your center 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 Support Center at support@grants.gov, <http://www.grants.gov/web/grants/support.html>), or call 1-800-518-4726.

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GLOSSARY

Assessment: The wide range of measurement tools used to support teaching, learning, and organizing systems at the student, classroom, school, district, state, or federal level to improve student education outcomes (e.g., academic tests, behavioral measures, observational tools, informal assessments, and school quality indicators), and to support education research.

Assessment framework: Includes the operational definition(s) of the construct(s) of measurement, the theoretical model showing how construct(s) are related to each other and/or external variables, a description of how the assessment provides evidence of the construct(s) identified in the rationale, a description of the rationale for how and why performance on the assessment items supports inferences or judgments regarding the construct(s) of measurement, and a description of the intended use(s) and population(s) for which the assessment is meant to provide valid inferences.

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 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 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 of 2015 <http://www2.ed.gov/policy/elsec/leg/esea02/index.html>)
 - Career and Technical Education Centers affiliated with schools or school systems

Charter schools: Publically-funded semi-autonomous public schools that receive a charter (which is to set out the schools operations, instruction, program, and expected performance) from an authorizer (authorizers vary by state and some districts) and are exempt from many state laws and regulations. Charter schools are not to charge tuition and are to use lotteries to accept students if they are oversubscribed.

Choice schools: schools chosen by students and their parents rather than through geographic assignment based on their residence and that receive public funding to educate these students. Some public choice schools may include students by choice and by geographic assignment. Other choice schools include students solely by choice (e.g., most magnets, charters, and private schools).

Choice options: the types of schools and mechanisms that support students' attendance at choice schools including open enrollment, magnet schools, charter schools, and public financial supports for attending private schools (e.g., vouchers, tax credit funded scholarships, education savings accounts, personal tax credits and deductions).

Choice programs and policies: state and local programs and policies that influence how choice options function and how choice schools are established, funded, enroll students, instruct students, and are overseen.

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).

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.

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.

Education savings accounts: state grants provided to parents in savings accounts from which they can pay for private schooling for their children.

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 study: A study that tests an intervention's beneficial impacts on student education outcomes in comparison to an alternative practice, program, or policy.

Efficacy follow-up study: An efficacy study that tests the longer-term impacts of an intervention that has been shown to have beneficial impacts on student education outcomes in a previous or ongoing efficacy study.

End user: The person intended to be responsible for the implementation of the intervention. Efficacy/Replication studies 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 scientific 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.

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.

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.

Magnet schools: Magnet schools are public schools (often operated by individual school districts, group of districts, or state education agencies) organized around themes. In most cases, students must apply to attend them (though some use geographic assignment as well) and the schools may or may not have selective admission requirements.

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).

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).

Open enrollment policy: Students may choose to attend traditional public schools other than the one they would be geographically assigned to either within their school district (intra-district choice) or within other school districts (inter-district choice). States may require districts to have open enrollment policies or may allow for voluntary district participation.

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 consistency of scores across replications of a testing procedure, regardless of how this consistency is estimated or reported (e.g., in terms of standard errors, reliability coefficients..., generalizability coefficients, error/tolerance ratios, item response theory (IRT) information functions, or various indices of classification consistency)." (AERA, 2014).

Replication study: 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.

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 topic 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, and, that as a result, may not be able meet the requirements for Efficacy/Replication 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.

Scholarship tax credit programs: Corporations (and sometimes individuals) receive a state tax credit from donations to private nonprofit scholarship-granting organizations that use the funds to provide scholarships to K-12 students to attend an eligible private school.

School choice: Students and their parents have the opportunity to choose a school based on their choice rather than through geographic assignment.

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

- Student academic outcomes: The Institute supports research on a diverse set of student academic outcomes that fall under two categories. The first category includes academic outcomes that reflect learning and achievement in the core academic content areas (e.g., measures of understanding and achievement in reading, writing, math, and science). The second category includes academic outcomes that reflect students' successful progression through the education system (e.g., course and grade completion and retention in grade K through 12; high school graduation and dropout; postsecondary enrollment, progress, and completion).
- Social and behavioral competencies: Social skills, attitudes, and behaviors that may be important to students' academic and post-academic success.

Tax credit and deduction programs: Programs that allow parents to claim a tax credit or take a tax deduction on their state taxes for expenses on private schooling for their children.

Theory of change: The underlying process through which key components of a specific intervention are expected to lead to the desired student education outcomes. A theory of change should be specific enough to guide the design of the evaluation (e.g., selecting an appropriate sample, measures and comparison condition).

Usability: The extent to which the intended user understands or can learn how to use the intervention effectively and efficiently, is physically able to use the intervention, and is willing to use the intervention.

Validity: "The degree to which evidence and theory support the interpretations of test scores for proposed uses of tests...When test scores are interpreted in more than one way...both to describe a test taker's current level of the attribute being measured and to make a prediction about a future outcome, each intended interpretation must be validated." (AERA, 2014).

Vertical equating: Putting two or more assessments that are considered to measure the same construct across different levels of development on a common scale.

Vouchers: State or school district scholarships that pay for students to attend private schools. States and districts set varying requirements for eligible students to receive the vouchers and eligible private schools to accept the vouchers.

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ALLOWABLE EXCEPTIONS TO ELECTRONIC SUBMISSIONS

You may qualify for an exception to the electronic submission requirement and submit an application in paper format if you are unable to submit the application through the Grants.gov system because: (a) you do not have access to the Internet; or (b) you do not have the capacity to upload large documents to the Grants.gov system; and (c) no later than 2 weeks before the application deadline date (14 calendar days or, if the fourteenth calendar date before the application deadline date falls on a Federal holiday, the next business day following the Federal holiday), you mail or fax a written statement to the Institute explaining which of the two grounds for an exception prevents you from using the Internet to submit the application. If you mail the written statement to the Institute, it must be postmarked no later than 2 weeks before the application deadline date. If you fax the written statement to the Institute, the faxed statement must be received no later than 2 weeks before the application deadline date. The written statement should be addressed and mailed to:

Ellie Pelaez, Office of Administration and Policy
Institute of Education Sciences, U.S. Department of Education
550 12th Street, S.W., Potomac Center Plaza - Room 4107
Washington, DC 20202
Fax: 202-245-6752

If you request and qualify for an exception to the electronic submission requirement you may submit an application via mail, commercial carrier or hand delivery. To submit an application by mail, mail the original and two copies of the application on or before the deadline date to:

U.S. Department of Education
Application Control Center, Attention: CFDA# (84.305A)
400 Maryland Avenue, S.W., LBJ Basement Level 1
Washington, DC 20202 – 4260

You must show one of the following as proof of mailing: (a) a legibly dated U.S. Postal Service Postmark; (b) a legible mail receipt with the date of mailing stamped by the U.S. Postal Service; (c) a dated shipping label, invoice, or receipt from a commercial carrier; or (d) any other proof of mailing acceptable to the U.S. Secretary of Education (a private metered postmark or a mail receipt that is not dated by the U.S. Postal Services will not be accepted by the Institute). Note that the U.S. Postal Service does not uniformly provide a dated postmark. Before relying on this method, you should check with your local post office. If your application is postmarked after the application deadline date, the Institute will not consider your application. The Application Control Center will mail you a notification of receipt of the grant application. If this notification is not received within 15 business days from the application deadline date, call the U.S. Department of Education Application Control Center at (202) 245-6288.

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U.S. Department of Education
Application Control Center, Attention: CFDA# (84.305A)
550 12th Street, S.W., Potomac Center Plaza - Room 7039
Washington, DC 20202 – 4260

The Application Control Center accepts application deliveries daily between 8:00 a.m. and 4:30 p.m. (Washington, DC time), except Saturdays, Sundays and Federal holidays.