



Connecting Research,  
Policy and Practice

## IES Grant Writing Workshop for Development & Innovation Projects

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Good morning, everyone. Welcome to the Grant Writing Workshop for Development & Innovation Projects. My name is Jackie Buckley, and I'm a Program Officer in the National Center for Special Education Research (NCSER). I'm joined today by Emily Doolittle, who is a Program Officer in the National Center for Education Research (NCER).

During the presentation today, if you have any questions, please use the Q&A feature of the webinar software to submit your questions during the presentation. Emily will be answering some questions directly, but we'll also pause periodically during the presentation and answer questions as appropriate for the whole group. For those of you who are looking for a more general overview of the broader grant opportunities with the Institute of Education Sciences (IES) beyond what we're going to talk about today, we do have Basic Overview webinars that are available on the web. The information in the Basic Overview webinar would be a great place to start, if you're looking for basic information about the range of grant opportunities available.

In addition, we have had webinars on the other types of projects IES funds – including our Exploration, Efficacy & Replication, Effectiveness, and Measurement projects. Again, the slides and transcripts for those presentations are available on the IES website. If you missed any of those or you realize by the end of today's presentation that perhaps your research is not appropriate for a Development & Innovation grant, do know that you will be able to access those prior webinars for the range of the grants that we fund here at IES.

## Agenda

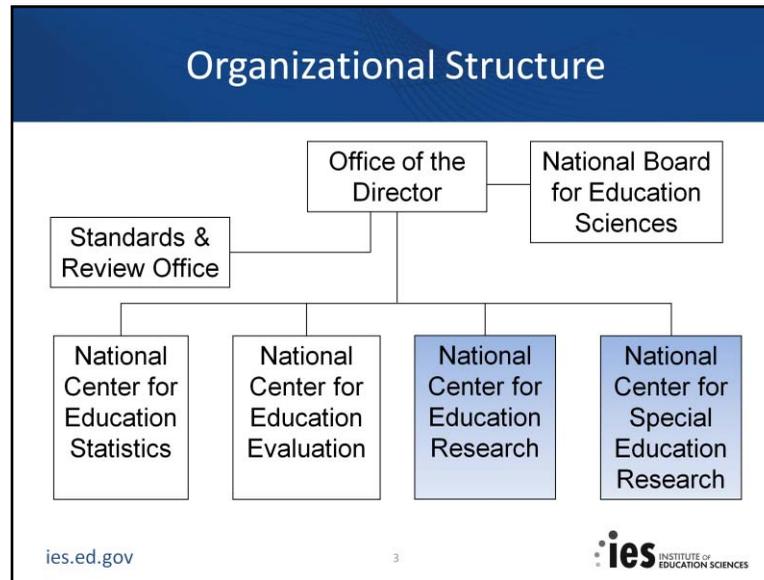
- **Introduction to IES**
- **Education Research Grants (84.305A) and Special Education Research Grants (84.324A)**
- The Development & Innovation Goal
- Four Sections of the Research Narrative
  - Significance
  - Research Plan
  - Personnel
  - Resources
- Application Submission and Review

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Here's our agenda for today. We're going to start with an introduction to IES and an overview of our research grant programs, particularly for those of you who may be less familiar with IES. You'll get a good sense of our mission and our research programs that support that mission. The majority of our time today, however, will be spent talking about Development & Innovation projects and what makes a successful development application. Then, we'll end with information about submitting applications to IES and our grant review process.



Here is the organizational structure at IES, for those of you who are not familiar. IES is considered the independent research arm within the U.S. Department of Education (ED). We're led by a Director, who at this time is John Easton. The Director position is a presidential appointment. The Director is advised by our National Board for Education Sciences (NBES), which you see on the right. The Board consists of approximately 15 members, who are presidential appointments as well. To the left, you see our Standards & Review Office, an important office here at IES. They are responsible for the peer review process. At the bottom of our chart, you see the four centers within IES.

First is the National Center for Education Statistics (NCES), and they are the primary federal entity for collecting and analyzing data related to education. If you're not familiar with them, you should become familiar, because they have a wealth of information about education in the United States that may provide helpful background material for your grant application Significance section to help you argue the importance of your research.

The next center is the National Center for Education Evaluation and Regional Assistance (NCEE). Usually using randomized clinical trials or regression discontinuity designs, NCEE does large evaluations of interventions chosen by Congress, the administration, or IES. The evaluations are carried out by contractors and they actually cover a wide range of topics and populations, such as early literacy, mathematics, teacher quality, afterschool programs, etc. They produce reports as a result of those evaluations and sometimes those can be useful to you as well, depending on your research interests.

Then, the final two centers in blue are the primary grant-making offices within IES—NCER, where Emily is, and NCSER or “nixer” as we call it, where I work. We have for the most part parallel research programs across the two centers, but we'll discuss the research in each center in a moment. Again, these are the grant-making centers. The Program Officers at IES are located here to work with applicants and grantees.

One thing to note about the structure of IES is that there is a firewall (of sorts). There is a separation of peer review from the grant centers by our Standards & Review Office. That allows Program Officers to work closely with applicants. We can respond to questions that you have or we can read drafts of your applications given enough time before the deadline. Working with us certainly can't guarantee you funding, but we can give you tips based on what we have seen to be successful or not successful with other grants in the review process.

## Overall Research Objectives

- Develop or identify education interventions (i.e., practices, programs, policies, and approaches) that enhance academic achievement and that can be widely deployed
- Identify what does not work and thereby encourage innovation and further research
- Understand the processes that underlie the effectiveness of education interventions and the variation in their effectiveness

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The overall research objective of IES is to know what works to improve student education outcomes, so that we can disseminate it. We also want to know what doesn't work, so we can stop using it. We know that there are a lot of interventions implemented in schools today that don't necessarily have a rigorous research base to them. We want to be able to evaluate some of those and figure out what is working or not working, so we can put our efforts into creating new interventions (which we'll talk about today) and figuring out what does work for students.

We also want to know what works for whom, where, and under what conditions, so we are using our resources with the appropriate people in the appropriate places. We also want to understand why it does work, so we understand how to improve education and we can build upon this understanding. These research objectives are what we are attempting to do with our grant programs.

## Final Outcomes of Interest: Student Outcomes

### ***Birth through Preschool***

- School readiness
- Developmental outcomes for infants and toddlers with disabilities (*for NCSER only*)

### ***Kindergarten through Grade 12***

- Academic outcomes in reading, writing, math, and science
- Behaviors, interactions, and social skills that support learning in school and successful transitions to post-school opportunities
- High school graduation
- Functional outcomes that improve educational results, transitions to employment, independent living, and postsecondary education for students with disabilities (*for NCSER only*)

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What works or doesn't work is in terms of student outcomes. Does something improve student outcomes or not? This is a key to writing an application for IES. IES-supported research is to address student outcomes. This can make it challenging to certain types of research that addresses things far upstream of students. If you're interested in intervening at the level of school boards or even principals, it's a longer leap to have improving principal quality improve student outcomes. For every application to IES though, you have to be able to address student outcomes and we'll talk about that in more detail today.

What are those student outcomes? In NCER, they start at pre-kindergarten—ages 3-5. School readiness is a student outcome actually across both centers. However, in NCSER, we actually are interested in student outcomes starting at birth. If you're interested in developmental outcomes for infants and toddlers with or at risk for disabilities, we accept applications addressing those outcomes within NCSER.

The K-12 arena, which is the bulk of the work that we fund here at IES, is a mixture of education and special education outcomes. Clearly, we're interested in academic outcomes—reading, writing, math, and science. We also have a strong portfolio of research addressing behaviors, interactions, and social skills that support learning in schools. Topics focused on Social & Behavioral outcomes are actually the topics that I oversee within NCSER and that Emily oversees within NCER.

Clearly, we're interested in high school graduation. We want kids to be successful and to graduate from high school. For NCSER, if you're interested in students with disabilities, we also have a focus on functional outcomes that improve educational results, transitions to employment, independent living, and postsecondary education for students with disabilities.

## Final Outcomes of Interest (cont.)

### **Postsecondary** (for NCER only)

- Access, persistence, completion
- Achievement in gateway math and science courses
- Achievement in introductory composition courses

### **Adult Education** (for NCER only)

- Reading, writing, and math for basic and secondary education and English language learners

The other outcomes, for NCER only, address Postsecondary & Adult education. In the postsecondary arena, it's really enrollment, persistence, and completion of postsecondary education. In particular, we are interested in achievement in the gateway math and science courses and introductory composition courses—those courses that are required and you need to be successful in them to be able to persist in postsecondary education. NCER also has an emphasis on adult education—so reading, writing, and math for adult basic and secondary education and English learners (ELs). Persons with disabilities could be included in these samples, if you're interested in Postsecondary & Adult education. We don't cover these topics within NCESER, but an emphasis on persons with disabilities certainly is allowed within the postsecondary and the adult education topic in NCER.

## Primary Research Grant Programs

- Education Research Grants (84.305A)
- Special Education Research Grants (84.324A)

These grant programs are organized by research *topic* and research *goal*.

When you are ready to apply to IES, the first thing you need to do is choose a research topic. You're going to choose a research topic and a research goal—the goal we're talking about is our Development & Innovation goal—but, first, you need to decide what topic you're going to fit into. We have two main grant programs or two Requests for Applications (RFAs). The Education Research Grants Program is identified by CFDA number 84.305A. The Special Education Research Grants Program is identified by CFDA number 84.324A. These grant programs are organized by research topic and research goal.

## Education Research Topics (84.305A)

- Cognition & Student Learning
- Early Learning Programs & Policies
- Education Technology
- Effective Teachers & Effective Teaching
- English Learners
- Improving Education Systems: Policies, Organization, Management, and Leadership
- Mathematics & Science Education
- Postsecondary and Adult Education
- **Reading & Writing**
- Social & Behavioral Context for Academic Learning

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The education research topics are listed here and you're going to see some parallel topics again with the Special Education Research Grants Program, but the topics range from Cognition & Student Learning (trying to bridge cognitive science and education); Early Learning Programs & Policies (this is where you'll see the pre-K, age 3-5 applications); Education Technology; Effective Teachers & Effective Teaching; ELs; Improving Education Systems (such as policies, organization, management, and leadership applications); Mathematics & Science Education; and as I mentioned on the prior slide, Postsecondary & Adult Education. Reading & Writing is bolded here because in the past few years, NCER hasn't been accepting applications for Development grants for Reading & Writing. There were so many proposals to develop new interventions within Reading & Writing that we went on hiatus for a couple of years. They are now accepting Reading & Writing applications for development work. If you have been tracking that, I just want to make that point to folks. Then, of course, there is the Social & Behavioral Context for Academic Learning.

## Special Education Research Topics (84.324A)

- Autism Spectrum Disorders
- Cognition & Student Learning in Special Education
- Early Intervention & Early Learning in Special Education
- Families of Children with Disabilities
- Mathematics & Science Education in Special Education
- Professional Development for Teachers & Related Service Providers
- Reading, Writing, and Language Development
- Social & Behavioral Outcomes to Support Learning
- Special Education Policy, Finance, and Systems
- Technology for Special Education
- Transition Outcomes for Secondary Students with Disabilities

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Some of the special education research topics allow the study of students at risk for special education. Others require a focus on students in special education only. Those details are contained within the RFAs. The first topic you see on the research topics list is the Autism Spectrum Disorders topic. This is the only disability-focused topic we have within NCSEER. That is because that topic is intended for folks interested in developing or evaluating comprehensive interventions for students with autism. By “comprehensive” it means you have to address multiple domains, which would not necessarily fit nicely within any other topic. That is why they have created a standing topic for Autism Spectrum Disorders as the only disability-focused topic.

We also have Cognition & Student Learning in Special Education. Our Early Intervention & Early Learning is birth through pre-K. We also have an emphasis on Families of Children with Disabilities; Mathematics & Science Education; Professional Development for Teachers & Related Service Providers; Reading, Writing, and Language Development; and our Social & Behavioral Outcomes. We also have an emphasis on policy, so we have our Special Education Policy, Finance, and Systems; Technology for Special Education; and then, for students with disabilities, Transition Outcomes for Secondary Students with Disabilities transitioning to postsecondary education, independent living, and post-school life.

There can be overlap across the Centers. So, we each have math/science and reading/writing topics. When you’re interested in a population of students who are at risk, there may be some overlap. Typically applications that come to NCER are at risk for academic problems. Whereas for NCSEER, you have to be at risk specifically for special education. That is one difference between the two centers.

There also can be overlap within a center across topics. Some research ideas could fit more than one topic. My best advice to you is read the RFA. Then, talk to the Program Officer who is the contact for that topic. Names of Program Officers are in the RFA. Which Center is the best for you? Which topic within the Center is the best for your research idea? Those are certainly questions that we can help you navigate.

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Next, we are going to talk about the Development & Innovation goal or projects.

## The 5 Research Goals

- Exploration
- **Development & Innovation**
- Efficacy & Replication
- Effectiveness
- Measurement

Remember that I said that to apply to IES, you have to pick a topic and goal. There are five research goals. As I mentioned, there have been other webinars presented on each of the four other research goals, which you are able to access on the website. Very briefly, however, the Exploration goal is intended to identify malleable factors that are associated with improved outcomes for students. Development projects, which are the bulk of our talk today, are typically to develop or revise an intervention designed to improve student outcomes. Efficacy & Replication projects take a fully developed intervention and determine through a rigorous design whether it improves student outcomes. The Effectiveness goal is intended to determine whether fully developed interventions with prior evidence of efficacy produce a beneficial impact on student outcomes—particularly when they are implemented under routine practice in authentic education delivery settings. Then, we have Measurement projects, which are intended to support the development of new assessments, the refinement of existing assessments, and the validation of these assessments or the validation of existing assessments for specific purposes, context, or populations.

## Purpose of Development & Innovation Projects

- Develop an innovative intervention (e.g., curriculum, instructional approach, program, or policy)
- **OR** improve existing education interventions
- **AND** collect data on its feasibility and usability in actual education settings
- **AND** collect pilot data on student outcomes.



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The purpose of Development & Innovation projects is to develop an innovative intervention—a curriculum, an instructional approach, a program, a policy—or to improve existing education interventions, collect data on its feasibility and usability in actual education settings, and collect pilot data on student outcomes. This development process must be iterative, which we'll talk about.

The Development & Innovation projects that we support are wide ranging in terms of the interventions that are being considered. We support work in the development of curricula—this could be semester-long, year-long, multi-year, or units within curricula. Maybe what you really want to do is focus on one particular unit. Say you're interested in the instruction of physics or physical principles and you would really like some resources to study how best to support force in motion. You would like to create a unit of a curriculum designed to look at force in motion. We would consider supporting something like that, if the review panel thought it was worthy.

We also support development work around instructional approaches. One of the things that needs to be considered in education is not only what is being delivered but how it's being delivered. We support research in the area of supplemental or add-on programs—programs that are optional and can be used in conjunction with the typical literacy or math curriculum—perhaps delivered after school or designed for students who need additional support in learning. We support development work in the area of professional development. So, we're interested in supporting researchers as they try to create new interventions supporting teachers becoming better at what they do in the classroom.

We also support development around school-wide interventions. Perhaps, you're really interested in developing a Social & Behavioral intervention designed to improve the social skills not only of an individual student in class, but of how the whole school operates as a system. We support efforts at that level as well. Finally, we can support Development & Innovation at the district-level as well.

Again, this process must be iterative—meaning you have multiple attempts at trying to develop this intervention. It could be getting initial information—feedback from the folks who are going to use the intervention. Say you're doing a teacher intervention, you have a roundtable of teachers, and they give you feedback on the initial version of your intervention. You try it out with a small number of them. Do they like it? Does it work? What worked for them or didn't work for them? Can they deliver this within the context of the school day, etc.? Then, you might revise it again and try it out with a new set of teachers, and so on. That iterative process needs to be evident to us, which we'll talk about more through our research plans.

# Is Development the right goal for me?

Ask, “*Do I understand the problem?*”

- Can I explain the underlying processes?
- Do I know what malleable factors might be targets for intervention?
- Do I know what distinguishes effective and less effective practices?

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To figure out if the Development goal is right for you, the first question that you really need to ask is, “Do you understand the problem?” Development work really depends on prior research that explores and identifies underlying processes and potentially malleable factors. You need to take a step back and think about what you need to know in order to answer that question. One has to be able to explain to the reviewers the underlying processes that are contributing to your hypothesized change—why you think that your intervention is going to be much better than what currently exists. Part of being able to explain that is being able to explain what those underlying processes are that are contributing to improved student outcomes and how your intervention is going to be able to achieve that.

You also want to make sure that you are able to articulate and know what the malleable factors are that might be targets for intervention. When you are developing an intervention, you have to change the way the curriculum is presented and the way the teachers are delivering the instruction in terms of the kind of work that students are doing. You need to be able to explain that to the reviewers, so that they know that what you are proposing is in fact linked to the things that can be changed within the education system.

The other piece that you need to think about is if you know what distinguishes effective from less effective practices. Now, you may not know all the answers to this, but there should be a theoretical and empirical literature that’s driving the development of your intervention, so that you can say, “This line of research suggests that this particular practice is likely to be more effective than another practice, which may be perhaps more prevalent in schools.”

We have three different questions that came in related to supporting interventions.

**Question:** “Has IES supported research on supplemental interventions designed to be delivered by a variety of educational professionals or related support professionals (e.g., occupational therapists, social workers)?”

**Answer:** Yes, we have. The best advice I’ll give you is to talk in more detail with Program Officers here. That will vary somewhat by topic. With any topic in the RFAs, at the end there are detailed bullets about what is allowed or not allowed or what you need to address within that particular topic. We certainly have supported interventions that are delivered by folks other than teachers—that includes parents, related-service providers, instructional assistance, and other folks in the school that are contributing to student learning.

Double-check those content and sample requirements that are associated with each topic. When in doubt, e-mail that Program Officer just in case.

**Question:** “Could the curriculum or intervention be for teacher education or training?”

**Answer:** Yes, absolutely. Within NCER, the Effective Teachers & Effective Teaching topic would be the first place to look. Other topic areas (for example, Social & Behavioral context for academic learning) also support teacher education and training. Within NCSEER, the devoted topic is Professional Development.

One quick note on that though. Make sure that you’re not asking about pre-service interventions. At this point, we support in-service professional development for teachers and other service providers. We don’t accept studies focused on pre-service teachers (with one very minor exception, which is under the Effective Teachers topic in NCER under Goal 1, Exploration). This is why, as you can see, it’s useful to talk to Program Officers. Even across the two centers, there are so many details within each topic that we talk to each other a lot.

**Question:** “Would you support interventions in non-academic settings (e.g., community centers/organizations) that may improve learning?”

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## Development & Innovation Projects

- About 50% of funded research projects across both Centers

How many Development & Innovation projects have we funded to date? About half of the projects that we support within each of the Centers are Development & Innovation projects, not because there is a quota or anything but primarily because half of reviewed applications come in under Goal 2. As a result, a large number of grants in our portfolio are specifically trying to revise, improve, or create new interventions for the use in context of schools.

## Development & Innovation Projects

### SHOULD

- Develop a new intervention or further develop an existing intervention
- Implement intervention in authentic education delivery settings
- Examine potential/promise of impact on education outcomes for students

Development & Innovation projects should develop a new intervention or further develop an existing intervention. You can develop an intervention from scratch or take an existing intervention and further develop and refine it to improve feasibility/usability in authentic education delivery settings or improve the potential impact on student outcomes. It needs to be implemented in an authentic education delivery setting, which typically is classrooms, schools, or districts. We have just mentioned some options where it might not be your typical classrooms or schools.

One example that I wanted to mention is Jeanine Stichter at University of Missouri. She has a project to modify and further develop an existing program—a clinic-based, social competence intervention for students with autism. This intervention was fully developed and running in clinic settings. She recognized the need to have interventions in schools—that's where the kids are, right? So, she wanted to take her fully developed, existing intervention and modify it to be a school-based intervention. There's enough work that needs to go into that process that she made the argument for 3 years of development work and was successful in making that argument. There's a precedent of refining existing interventions that has been acceptable within our Goal 2 grant mechanism.

As another example in thinking about authentic education delivery settings is Alex Trout at University of Nebraska at Lincoln and her project "On the Way Home." It's a family-centered, academic reintegration intervention model, and it's essentially addressing adolescents with high-incidence disabilities who reintegrate into the home and school settings following a stay in out-of-home care. They're working across those settings to try and improve outcomes for students who move from out-of-home care back to their home/school environments. What she did is take three evidence-based components and integrated them. She is taking Check & Connect, Common Sense Parenting, and a self-management homework intervention that were existing and trying to figure out how to integrate them to improve outcomes for adolescents who are coming home from out-of-home care.

In their application, these researchers argued that the primary factors that affect negative, long-term academic outcomes for this population include school dropout, poor parental support in home/school communication, and low levels of homework completion. Therefore, the intervention that they designed addressed school dropouts (Check & Connect program), low parental support in home/school communication (Common Sense Parenting), and low levels of homework completion (Self-Management Homework Intervention).

## Development & Innovation Projects

### SHOULD NOT

- Propose only minor development activities and focus primarily on rigorous test of the intervention on student outcomes
  - Such projects should be submitted under the Efficacy goal

Development & Innovation projects should NOT propose only minor development activity and then focus primarily on a rigorous test of the intervention on student outcomes. Those projects really should be submitted under our Efficacy goal. So, the purpose of intervention development, which we know takes time and effort to do a thorough job, is to develop interventions that are going to be feasible and usable in schools. If you have some minor tweaking to do, but your time really will be spent on testing the impact of your intervention, then I would probably direct you to an Efficacy project. You may test the efficacy of certain aspects of your intervention—a viable component in order to support the development of the intervention—but again your focus is on the development, not the impact of the full intervention.

So, we have a question that came in that's about the Transition Outcomes topic.

**Question:** *“Is the Transition Outcomes for Secondary Students with Disabilities topic appropriate, if you are planning to develop a program of academic and employment skill development for individuals with significant disabilities, ages 18 to 22?”*

**Answer:** *Oh, good question. Within NCSEER, we say K-12, but we know that there are students with disabilities in the high school settings who are older than your typical age 18 or when students graduate. As long as students are still receiving services through the Individuals with Disabilities Education Act (IDEA), you're still eligible to address that population within NCSEER. So, they could be up to age 21, as long as they are still receiving services through IDEA.*

*Because you asked about the Transition topic, I would like to mention what is new this year with that topic is if you develop an intervention in high school settings for that population, this year we allow you to track them into postsecondary settings. If you have an intervention that starts in high school, you can then continue to implement that intervention in the freshman year in a postsecondary setting.*

**Question:** *“Would a project that is integrating two existing programs be considered a Development project (e.g., Head Start and TIPPE)?”*

**Answer:** *Yes, this would definitely fit under the Development & Innovation goal because in order to integrate two programs you're developing something new. I think that the Development & Innovation goal is definitely a viable place for that kind of work.*

*A word to the wise, if that is something you're interested in doing, reviewers always have to be very clear as to why you chose those particular components. Even the example I had on a prior slide with Alex Trout and her reintegration model taking three existing components, you have to be very articulate as to why of the universe of potential interventions out there you would choose to combine those particular ones?*

## Development vs. Efficacy

- Consider how much more development is needed
  - *Example:* If <1 year is needed to develop intervention and two years are spent testing impact, consider an Efficacy project
  - *Example:* If 3 to 6 months is needed to develop fidelity or professional development materials only, consider an Efficacy project

Again, when considering submitting as a Development versus an Efficacy project, think about how much more development is needed. If it's less than a year of time that you need, you're probably ready to move to an Efficacy grant. If you need only 3-6 months to develop fidelity or professional development materials (that's the only piece that's missing), you could accommodate that development work within an Efficacy project. It really is just how much development is needed, and those questions are great questions for Program Officers to help you work through, because it will be dependent on your particular situation and just how much you have to do.

## Expected Products from Development & Innovation Grants

- A **fully developed** version of proposed intervention including
  - A well-specified theory of change for the intervention
  - Evidence that intended end users understand and can use the intervention
- Data that demonstrate end users can feasibly implement the intervention in an authentic education delivery setting

In this year's RFA, we have clearly laid out expected products from all our grants. From all Development & Innovation grants, we expect a fully developed version of the proposed intervention, which includes a well-specified theory of change for the intervention—and we'll talk a little bit more about what we mean by “theory of change”—and evidence that the intended end-user understands and can use the intervention. By “fully developed,” we mean all materials and products necessary for the implementation of the intervention in authentic education delivery settings. Then, we also expect you to have data that demonstrates end-users can feasibly implement the intervention in authentic education delivery settings. It may be a fantastic idea, but if teachers can't implement it given the context of their school or classroom or day—if it's not going to be feasible—it's not something that could be implemented in schools. When you go through this development process, you need to be able to show us at the end that it can be done easily, feasibly, and can be used in schools in authentic education delivery settings.

## Expected Products from Development & Innovation Grants

- Pilot data regarding intervention's promise for generating intended beneficial student outcomes, along with
  - A fidelity measure or measures to assess whether intervention is delivered as it was designed to be by end users
  - Evidence regarding fidelity of implementation during pilot study

We also want pilot data regarding the intervention's promise for generating the intended beneficial student outcomes along with fidelity measures to assess whether the intervention is delivered as it was designed to be by the end-users. We want evidence regarding the fidelity of implementation during the pilot study. The expectation is that projects will produce pilot data showing the promise and we really expect that these projects will lead to subsequent applications to test the efficacy of the intervention under the Efficacy & Replication goal. So having the fidelity measures sets you up nicely for an Efficacy study down the road. All our Development grants are funded with the idea that we will give you money to develop this innovative idea, but our expectation is that you are going to take it to the next step. Then, once it is fully developed, you are going to come back and submit for an Efficacy & Replication grant to rigorously test out whether the intervention improved outcomes for students.

## Would these projects fit under Development & Innovation?

- Give iPads to half of the students, monitor iPad use, and compare test scores at end of year
  - NO
- Develop 9<sup>th</sup> grade science course over summer, implement it from Sep to Dec, and measure student gains in knowledge, adding other cohorts in years 2 and 3
  - NO
- Develop new writing program
  - Develop with 10 teachers over Y1 by trying components out in class and revising accordingly
  - Feasibility test with 10 new teachers in Y2
  - Compare writing scores of students of 10 teachers to scores of students from 10 other teachers in Y3
  - YES

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Would these projects fit under a Development & Innovation goal? There's a project that gives iPads to half the students, monitors iPad use, and then compares test scores at the end of the year. Do you think that is appropriate for Development & Innovation? Hopefully you are saying "No," and if not, by the end of this presentation, hopefully you'll be saying "No." In this example, at least as it's described, you haven't really developed anything. There's no development process. It's just giving the iPads to the students and comparing their outcomes at the end of the year. There is nothing here that is being developed.

What about this example? You want to develop a 9<sup>th</sup> grade science course over the summer, implement it from September to December, and measure student gains in knowledge, adding other cohorts in years two and three. Would that be an appropriate Development project? Again, the answer is a "no" because the focus seems to be more on testing the intervention. Thinking about minor development work and then testing would really be more appropriate for the Efficacy goal. The intervention was developed over the summer, so it's not clear that you'd actually have the feasibility and usability data of the end-users that's required. In the summer, the presumption is teachers are not working, so you could not have worked with teachers to help develop this particular intervention.

Finally, here is an example to develop a new writing program. You develop it with 10 teachers over 1 year. Do you try out components in a class and revise accordingly? Maybe you did some focus groups with those teachers and got their feedback. Then, you designed a feasibility test with 10 new teachers in Year Two, who weren't involved in your Year One work. Then, you test it with them. Is this feasible in your classroom? Are you able to use it? Do you understand it? Can it be implemented? In Year Three, you compare the writing scores of students of your 10 teachers to scores of students from 10 other teachers – new teachers, who haven't worked with you in the past – and compare the outcomes for students. These procedures are similar to what folks would follow in a typical Development grant. From such procedures, researchers can examine the usability for the end-users and promise of beneficial effects through a pilot study.

We had a question come in that I thought we should consider.

**Question:** "We would like to develop an intervention to improve school leadership. We predict improved teacher outcomes, first and foremost, and then improved student outcomes. We notice that the Goal 2 studies involve the collection of child outcome data. Would this still be the case in an intervention such as ours?"

**Answer:** The answer is "yes." That gets to the challenge that Jackie mentioned early on. For IES-supported research, it's really about improving student outcomes. Admittedly, this sometimes can be hard in the context of a Goal 2 project.

At the end of the day, there is a recognition by the panels that I have sat in on, on the difficulty of doing that—within the context of the Development & Innovation timeframe and the level at which you're intervening. If you're talking about school leadership, you're talking about principals and you want to drill down to student outcome. That's very difficult to do within the context of the Development pilot study. The reviewers get that. What you have to have is a really strong, theoretical rationale for why, if you change that principal behavior, it would lead to improved student outcomes.

If the intervention can change adult behavior and it does not lead to an eventual change in student outcomes, we don't care so much. That's great that principals are more "effective" according to you, but if it doesn't actually improve outcomes for students, we're not too excited or interested in that.

Then, we have another question.

**Question:** "If the project seems to be somewhere between Development & Innovation and Efficacy, but the development that has already occurred was not IES-funded, is it wise to move directly to an Efficacy Grant?"

**Answer:** It's a good question and we get it a lot because clearly we support Efficacy studies for interventions that were not developed through IES. In thinking about what you need by the end of the Development project—the pilot data, the feasibility/usability data—if you don't have that, we'd really have to talk to you to figure out if there is a way you can get some of that, if there is some extant data you can draw from to help support it, or if your time would best be spent with additional development work on the intervention to prepare you for an Efficacy study. It's a hard question to answer without knowing

*the ins and outs of your particular intervention. It could go both ways, so I would encourage you to work with Program Officers to try and figure that piece out.*

## Development & Innovation Projects: Challenges

- No widely accepted, systematic process for developing interventions
- Education interventions cover wide range in scope
- Disciplinary differences in approaches

What are some of the challenges that you're going to confront as you're preparing your application? We've talked about some of them already. One challenge is that there are no widely accepted, systematic processes for developing interventions. We can talk in general about what we've seen in successful Development grants and what our requirements are in the RFA, but there's no one right way to do it. Say, within the area of education technology, there's one framework that's used for developing an intervention. In the area of a typical classroom, for ELs, there's a much wider and more divergent set of approaches for that process.

The other thing that poses challenges is that education interventions cover a wide range and scope. You have very distinct disciplinary differences in terms of researchers who are coming to, say, a physics unit. Going back to that force in motion example, you might have a science educator who'd like to put in a grant to develop a force in motion unit, but you might also have a cognitive scientist who had looked at how expert scientists learned physics problems or learned physics and used physics and would like to take that knowledge to create a new education intervention. Those perspectives of a trained science educator and a trained cognitive psychologist come at the problem very differently. One of the things that you'll face as you're putting your application together is that the reviewers you have may not share your disciplinary perspective. Part of the burden is on you to describe the disciplinary and theoretical foundations that are driving the work that you're proposing.

## Agenda

- Introduction to IES
- Education Research Grants (84.305A) and Special Education Research Grants (84.324A)
- The Development & Innovation Goal
- **Four Sections of the Research Narrative**
  - Significance
  - Research Plan
  - Personnel
  - Resources
- Application Submission and Review

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The Research Narrative is the heart of your application. It covers the substance of your proposed work, and it's what the peer review panel focuses on. You have 25 pages to be able to communicate all the information in the four sections – Significance, Research Plan, Personnel, and Resources. The discussion today should be supplemented by you reading the RFA and talking to a Program Officer, as the requirements for the Research Narrative may vary by grant program and research goals.

## Research Narrative

- Key portion of your application
- Comprised of four sections
  - **Significance**
  - Research Plan
  - Personnel
  - Resources

We're going to start with the Significance section.

## Significance

Answers these “big picture” questions:

1. What is the specific intervention to be developed/revised?
2. Why is this intervention expected to produce better student outcomes than current education practice
3. What is the overall importance of the proposed project?

The Significance Section in general answers three big-picture questions. *What is the specific intervention to be developed and revised?* That first question sometimes confuses people because they say, *"If I'm going to develop it, how am I supposed to describe it, if it's not developed yet?"* We'll talk a bit about how you do that within an application.

*Why is this intervention expected to produce better student outcomes than current education practice?* That's a really important question that we're going to talk about in more detail.

Then, *what is the overall importance of the proposed project?*

## Significance: Describe specific issue or problem

- Address overall importance of issue/problem
- Describe how its resolution will contribute to improvement of student outcomes
- Include discussion of importance of problem to education stakeholders

The first thing you need to do in thinking of your Significance section is describe what the specific issue or problem is. Address the overall importance of the issue or problem. Why do we even care about this particular issue that you're trying to address? You need to clearly describe how resolving this problem will contribute to the improvement of student outcomes. It's always good to include a discussion of the importance of the problem to education stakeholders. Again, you're speaking to a wide audience on the review panels. If you know an issue is an issue for schools, principals, teachers, students, parents, whomever, include that discussion in arguing for the importance of your particular problem.

Elizabeth McCauley is developing an intervention for high school settings called the Brief Intervention for School Clinicians. She argued that research has shown that youth who experience mental health problems—especially those who do not receive appropriate, timely intervention—are at risk for academic failure. She made the argument for why we need to focus on this population of students and how school-based services can improve access for students in need and improve their emotional and behavioral functioning. She argued that school-based mental health services also seem to have the potential to enhance academic achievement. However, high school settings pose challenges for the successful implementation of those interventions. Her argument focused on why it's important to address this population of students and further address it through school-based mental health services and clinicians in those environments.

Elisa Shernoff at University of Illinois at Chicago is developing an intervention called Enhancing Effectiveness and Connectedness among Early Career Teachers in Urban Schools. She argued that early career teachers working in low-income communities experience greater teacher attrition rates (at nearly 50%). That's a huge issue for schools. She also argued that two of the strongest predictors of attrition are teachers' classroom management skills and their ability to engage students in learning. They're developing, refining, and testing the feasibility of a professional development model for early career teachers working in urban settings. Their model addresses these predictors of attrition. They're pairing early career teachers with peer-nominated teachers and coaches. There's a professional learning community. It's all designed to promote early career teachers' connectedness to colleagues and the ability to intervene with behavior in classrooms—important issues for stakeholders, practitioners, policymakers, etc.

## Significance: Intervention Description

- What are the components or features of the proposed intervention?
- How do the features or components relate to each other?
- Who will implement or use it?
- How will it be used?

*Contrast these with current practice and its identified shortcomings*

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As I mentioned before, you also have to describe the intervention. You have to give enough sense of what it may look like. Granted this is probably going to change by the end of the Development process, but you have to come to the table with the components or the features of the proposed intervention. You want to develop and intervention and it didn't come out of thin air. You should identify the target population and discuss why you think based on prior theory or prior research your particular intervention is the way to go. There should be some description of what you think are going to be the key components or features of the intervention.

How do the features or components relate to each other? Why did you choose those? Who is going to implement it or who's going to use it? How will it be used? You should provide enough of a description, so reviewers can evaluate whether your intervention has the potential to produce substantially better student outcomes, because it's sufficiently different from current practice and does not suffer from the same shortcomings. It has key components that can be justified using theoretical or empirical reasons and its implementation appears feasible for teachers or other education personnel, particularly given current resource constraints in school (e.g., time, funds, personnel).

You really need to contrast these components with current practice and its identified shortcomings. There are a lot of interventions out there in schools. So, what is it about your intervention that's going to be so much better than existing practice (especially if you're doing work in an area where there's been a lot of research)?

A great question just came in.

**Question:** *Exploration projects are to generate causal hypotheses. Efficacy & Replication and Effectiveness projects are to test causal hypotheses. Can you clarify where Development projects fit in the generating versus testing spectrum?*

**Answer:** *Through a Goal 1: Exploration project, you've generated those hypotheses saying, "I believe that we can change this particular student behavior or change this particular teaching practice and that's going to lead to an improvement in X student outcomes." The Development projects are the way you operationalize bringing about that change. It takes you from elucidation of the theoretical model to a way to put that into practice. Then, in Goal 3: Efficacy, you can actually implement it and see if you get the intended outcome.*

*That's a really good question. In Goal 1, you've developed that theory of change and understand how you might go from X to Y, with Y being the improved student outcomes. In Goal 2, we figure out concretely how to get that change to occur in a school setting or some other education setting.*

## Significance: KEY QUESTION

- **Why is the proposed intervention likely to produce better student outcomes relative to current education practices?**

An important key question is “*Why is your intervention likely to produce better outcomes relative to current practice?*” This is a huge question that you really need to address for reviewers. You’ll laugh, but I think of the TV show, Shark Tank, if any of you watch that. So, that show is where these inventors commonly present their inventions to a panel of investors and try and argue that their product is so great that investors need to invest in it and produce this product. Proposing Development projects are very similar. You have to make a really strong argument for why yours is going to be better than what’s existing. For example, I see it from the Social & Behavioral world with violence prevention programs—a lot of violence prevention programs out there have a moderate at best impact on student outcomes. If you come to the table with a violence prevention program, you have to make a really strong argument for why your intervention is going to produce better outcomes for students, given that all these other programs have tried and haven’t done so well. So, it’s a really important thing that you need to convince reviewers about.

*Example:*  
*Teacher PD for Pre-K ELL Vocabulary Instruction*

- Content
  - Which words will be taught? What is the rationale for that decision?
- Strategies for vocabulary instruction
  - What techniques? Rationale?
- Delivery of information to teachers
  - What materials? What mode of instruction for teachers? Rationale?
- Objective
  - What should teachers be able to do?
  - What should their students be able to do?

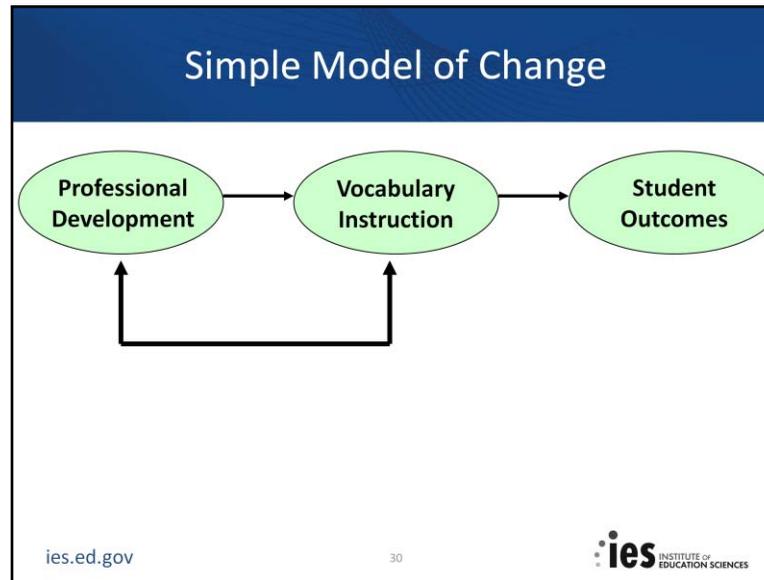
Given the time, I will skip through this example of a teacher professional development topic of things that you might need to think about as far as being able to describe the particular intervention—the content, how is it going to be delivered, etc.

## Significance: Initial Theory of Change

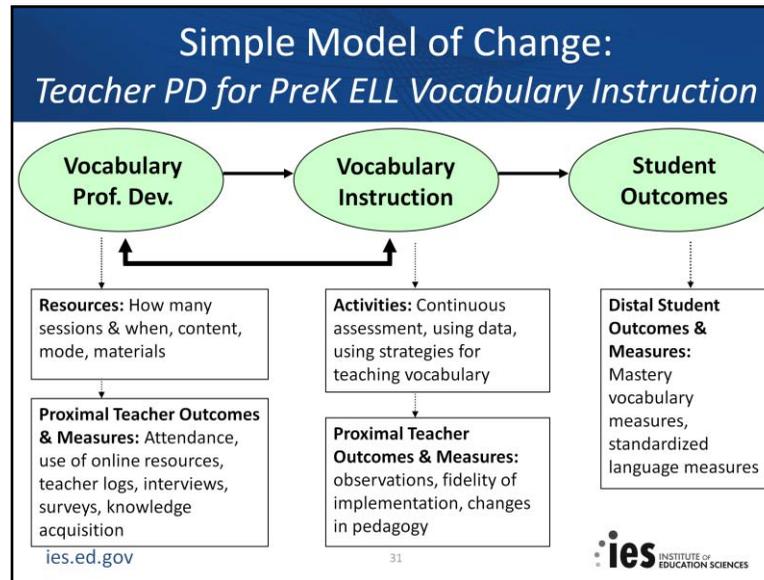
- **What is the causal chain of events that leads from the implementation of the intervention to the desired outcome?**

I want to move into theory of change quickly, because you do need to describe your initial theory of change for your proposed intervention. *What is the causal chain of events that leads from the implementation of the intervention to the desired outcomes? What is the improvement in student outcomes?* The theory of change details a process through which the key components of the intervention are expected to lead to those desired student outcomes. We recognize that you may need to revise your theory over the course of the project, but in your application you need to be able to answer the question, “*What is the causal chain of events that leads from the implementation to the improved outcomes?*”

When you’ve clearly described the theory of change that guides your intervention and its components, reviewers are better able to evaluate the intervention’s grounding in the theoretical and empirical foundations and their relation between the interventions and the outcome measures. For example, the proposed measures tap the construct that the intervention is intended to address. For intervention design to directly affect the teaching and learning environments and thereby indirectly affect student outcomes you need to be clear in your theory of change to identify the proximal outcomes that intervention is designed to affect (e.g., the teacher practices or principal practices, and how those practical outcomes are to impact the more distal student outcomes that are intended to be improved).



Here is a super-simple Model of Change. You need to think about what the theory of change will look like. At the simplest level, you can have a model that looks like this, where you start with a professional development intervention. Teachers who experience that professional development intervention and provide this vocabulary instruction to the classroom should then lead to improved student outcomes. So, this is the simplest model, but things are not always so simple. There are a lot of pieces that you need to specify in your model of change.



When you start to think about what those pieces are, you need to include information in the application. What are the resources that you're going to need to have in place in order to support this professional development? How many sessions do you think you need? When are those sessions going to happen? What's the content of those sessions? What's the mode of delivery, etc.? Then, you need to think about what data you're going to collect to examine whether this professional development intervention is actually happening as you hoped it would, if this is feasible. *Do teachers actually come to your program?* Attendance is an important metric. If online resources are part of what you're using, you want to have some way to track the use of those online resources. There are automated logs that can track what teachers do. Maybe you're going to have the teachers record in a written format what they're learning. Are you going to do interviews? Are you going to do surveys? How are you going to measure teacher knowledge acquisition?

You also want to make sure in your theory of change that you specify what this new instruction will look like. We expect that teacher content knowledge and teacher pedagogical knowledge is going to change. You also expect that the instruction that teacher carries out will change. How are you going to measure that? Are you going to do observations of teachers? Do you have some sort of checklist? Finally, you have to think about student outcomes, because IES requires that you all get to student outcomes at some level and include some measurement of student outcomes.

## Significance: Theoretical & Empirical Rationale

- What are the theoretical justifications supporting the theory of change?
- What is the empirical evidence supporting the theory of change?

*What are the theoretical justifications supporting the theory of change?* You need to provide empirical evidence supporting the theory of change to show that the proposed interventions or its components can be expected to have the intended outcomes. In the literature review, describe any prior published or unpublished work completed by your team that supports the development effort. Using a theory of change means having this well-specified, conceptual framework that theoretically links the malleable factors with the student outcomes.

Being able to describe your prior work is really important, because reviewers have a chance to understand the methodological approaches you are expert in, your prior experience in relative areas, and so on. You really need to be able to communicate to reviewers the experience that you're bringing.

## Significance: Practical importance

- Describe why fully developed intervention will have potential to improve student outcomes in educationally meaningful increments
- Describe why proposed intervention may be affordable for and easily implemented by authentic education delivery settings

You also need to think about practical importance. Discuss the practical importance of the intervention, including how it could help resolve the issue or problems that form the basis of your project. You could also note the level of resources expected for the implementation of the intervention—if it requires less classroom time, less materials, the cost is cheaper than existing interventions, and so on. You can make those kinds of arguments.

## Additional Considerations If Seeking a Second Development Award

- *If seeking to further develop or extend an intervention from a previous Development award, you should*
  - Justify need for a second Development award
  - Describe results and outcomes from other Development efforts
  - Describe related efficacy evaluations and data (if available)

One additional consideration, if you're seeking a second Development award, is If you're seeking to further develop or extend an intervention from a previous Development award, you really need to justify that need for a second Development award. We certainly have examples where folks came in with a Development grant but through the course of the process realized that more development work needed to occur. You need to describe the results and the outcomes from that prior Development effort and any Efficacy evaluation or data.

An Efficacy trial with null or disappointing results would be a good candidate for more development work. One example might be an early childhood curriculum for literacy and science—maybe it was efficacious for typically developing students but not students with disabilities. So, we have an example of investigators who have a Goal 2 study to improve outcomes for students with disabilities.

## Four Sections of the Research Narrative

- Significance
- **Research Plan**
- Personnel
- Resources

I'm going to move quickly through the Research Plan section.

## Research Plan

- Clear description of development activities, so that reviewers will understand
  - What will be developed
  - How it will be developed
  - When the development will take place

For Development applications, the Significance and Research Plan sections are both very important, in part because the Significance section really lays your groundwork. It lets the reviewers know that what you're proposing to do is both theoretically and empirically grounded. You also need to provide a really detailed Research Plan. You don't want to spend so much time on the Significance section that you don't leave yourself room in the application itself to elaborate on the components of the Research Plan and the methodological requirements. You can always work with Program Officers in trying to figure out how to best balance that.

You need to make sure you have a clear description of the development activities themselves. The reviewers need to come away from reading your application with a clear understanding of what will be developed. What is this "thing" going to look like potentially in the end? They understand that you are not going to know all the pieces. That's why you're asking for money for development work. They have to have some sense of what the "it" is and what the end product may be.

They need to understand how you're planning to develop it. I think this is a really important piece. We talk a lot about "iterative" development process. People often get tripped up with that word. The *how* is really important. You need to make that clear.

Finally, one of the other challenges that you may confront as your putting together a Development plan is the *when*. How many iterations are you going to do? In part, it depends on how much time the intervention is that you're proposing to develop.

You must clearly describe the method for developing the intervention to the point where it can be used by the intended end-users. The method for collecting the evidence for the feasibility of the end-users implementing the intervention is to detail the method for assessing the promise of the intervention for achieving the expected outcomes for your pilot study. For each of these, you need to describe the sample, the setting, and the measures and show them to be appropriate for meeting the research aims of the project. A primary purpose of the Development & Innovation project is the development of the intervention, the majority of the project's time and resources should focus on the development process.

## Research Plan

1. Sample
2. Iterative development process
3. Feasibility of implementation
4. Pilot study
5. Measures

This lays out what I just said—what’s needed in your Research Plan.

## Sample

- Describe samples & settings that will be used to
  - iteratively develop intervention
  - assess feasibility of implementation
  - assess promise of intervention in pilot data

You want to describe the samples and the setting that you're going to use. The samples and settings you're going to use are probably going to be multiple and may be different for each stage of the process. In the very beginning, you're going to have a sample and a setting in which you're going to develop the intervention—where the iterative development work is going to happen, where it starts. Typically, the first development will happen with teachers working closely with you and your team of research assistants. Maybe you have a curriculum design expert working to develop the intervention you're going to test with one or two classes of students. You have some idea of what this is going to look like going into it, but then you gather that feedback from potential end-users. *Did they like it? Do they think this would fit in their classroom or their school? What are some of the barriers, etc.?*

After you go through that first round, you're going to revise it and you're going to test it again. Maybe you're going to test it with a different sample of students. You really want to specify that and be very clear to reviewers “who” is participating in each stage of your research. You'll want to have end-users, who are using this intervention who might not have been part of that original development. What is the feedback you get from them?

Finally, when you think about who are going to be part of assessing the promise of the intervention and the pilot study, you probably need a whole other sample for your pilot study. You need to think through who is going to be involved in your process.

## Iterative Development Process

### *Make clear*

- What will be developed
- How it will be developed to ensure usability
- Chronological order of development

What do you need to include when you're talking about this development process? Here you're really trying to help the reviewers understand how you are going to take an idea of an intervention and make it happen. What is the revision process you're going to go through to be able to create a fully developed intervention at the end that has evidence of feasibility and usability? Know that IES doesn't require or endorse any specific model of iterative development. We recommend that you review models that have been used to develop interventions. There are some references in the RFAs that you could look at.

Similarly, there is no preset number of iterations—how many times you revise, implement, observe, and revise. You need to identify and justify your proposed number of iterations based on the complexity of the intervention and the implementation. The iterative process should continue until you determine that the intervention can be successfully used by the intended end-users (e.g., teachers, students, whomever).

Often, if you provide a timeline that delineates this iterative development process, that's really helpful for reviewers to understand the ordering of the steps in your Development process.

## Iterative Development Process

- How will initial version of intervention be developed
- How will you refine and improve upon initial version of intervention
- What data will be collected to determine how intervention (or component) is operating
- How will data collected be used to revise intervention
- What criteria will be used to determine if intervention can be successfully used by intended end user

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I have yet to see a Development grant come in and have whatever they suggested initially not change at all through the course of their development process. There are always things you can't take into account—things that aren't going to work as well as you think they're going to—whether it has to do with the characteristics of the teachers, students, schools, or the access to technology.

What you need to do for reviewers in this section is a couple of things. You need to help them understand what your vision is for the proposed intervention. In the best of all worlds, given what you know now as you're beginning to develop this intervention, what do you think “operating as intended” means? What should it look like when it is operating? This often involves the collection of process data—observing a teacher implementing a lesson, getting feedback from users, having focus groups with students, holding structured interviews with folks—and then you need to specify how data will be coded.

What are you looking for? How will the data be used to revise the intervention if needed? You really need to focus on how the data that you're collecting will be used to revise the intervention. This is one area where many applications fall down. You'll read applications where they say “*We're going to collect all of this data—qualitative and quantitative and then we're going to revise the intervention*”—without providing any discussion of how that data will be analyzed. The reviewers want to know, so you really need to provide details of how you're going to take this wealth of data that you're collecting and use it to revise and refine the intervention through your iterative development process.

## What will be developed?

Content/ Feature	Exists	Partially Developed	To be Developed
A	X		
B		X	
C			X

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Something that's often helpful for reviewers is if you include some kind of chart, which explains to the reviewers what pieces of your intervention already exist or what pieces need to be developed entirely—especially if you're not coming completely from scratch and you have some pieces that are developed. It gets really confusing for a reviewer, if you're not entirely clear as to what is fully developed, partially developed, or not developed at all. So having some kind of chart or some visual for folks is really helpful.

## Iterative Development Process

### *Example: Teacher PD Video Clips*

- Select possible examples from videotapes of master teachers implementing strategies
- Write accompanying text for clips
- Teachers (similar to target audience) review prototype clips and text
- Semi-structured interview for teacher reactions in key areas
  - e.g., clarity of main message, length of clip/text, organization of text and its relation to clip
- Content analysis of interview data to identify what needs refining
- Continue to refine and assess until consistent responses for **identifying main message** and **perception of user-friendly clips/text**

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I am going to skip this example. There's just information in here about what you may do during the development process.

## How many iterations??

### *Depends on intervention*

- Complexity
- Implementation

We mentioned already how many iterations to have. It really depends on the complexity of the intervention and how it's going to be implemented. Sometimes, there is just a limit in terms of the amount of time you have. If you have a full semester long intervention, you can't continue to revise indefinitely. You just don't have the time. On the other hand, if you're working on a 9-week unit, then you have multiple 9-week periods where you can test out that unit and continue to revise. The other thing that would factor into this is whether the intervention you are developing is brand new or you're building on something existing. That may play into how many iterations you might need.

## Feasibility of Intervention

- Demonstrate that intervention can be implemented with fidelity
  - In settings that represent type of settings for which intervention is intended
  - By users who are like those for whom product is intended

You really need to describe the feasibility. It should be the feasibility in the setting for which the intervention is intended and by users for whom the product is intended. If it's intended for teachers, you better be using teachers to help you assess the feasibility of the intervention in settings where you think this intervention would end up one day.

## Pilot Study: Promise of the Intervention

- Do targeted student outcomes change in the appropriate direction?
- Is implementation of intervention associated with changes in activities and behaviors that are consistent with the theory of change?

The pilot study—the third part—usually happens in the last year of a Development project that you propose to carry out a pilot study where you're attempting to determine the promise of that intervention. Do the targeted student outcomes change in the hypothesized direction? Are you improving academic achievement? Are you reducing negative or problem behavior? You want to look to see whether the implementation of the intervention is associated with changes in activities and behaviors that are consistent with your theory of change.

## Pilot Study: Promise of the Intervention

- Type of pilot study depends upon
  - Complexity of intervention,
  - Level of intervention implementation,
  - 30% limit on grants funds that can be used for pilot study

To get at the promise of the intervention, what are the appropriate methodological techniques to use? It's going to depend on the complexity of the intervention and the level of the intervention implementation (e.g., the student level, school level). We have a 30% limit on grant funds that can be used for the pilot study. Over the years, we have said the Development projects really need to focus on the development and not focus as much on the evaluation, because it's a pilot study. We operationalize that by saying you can't use any more than 30% of your grant funds specifically for the pilot study, and the majority of your funds and your effort need to be on the development process.

## Pilot Study: Promise of the Intervention

- Pilot studies may range along continuum of rigor
  - Efficacy studies
  - Underpowered efficacy studies
  - Single-case experimental studies
  - Quasi-experimental studies

This year, the RFA includes a range of designs that can be used for your pilot study, and they range along a continuum of rigor. You could design a pilot study that would essentially be a fully powered Efficacy study. You could have an underpowered Efficacy study. You could propose single-case experimental studies. You could propose quasi-experimental studies for your pilot study. Although the range of methodological rigor is allowed in the design of pilot studies, IES notes that the more rigorous the pilot study, the stronger the evidence will be to support a future Efficacy & Replication study of an intervention showing promise. However, there is a 30% limit on the grant funds that can be used for the pilot study. That alone may limit what you can do in the pilot study. Fully powered Efficacy studies for many development projects can be difficult, given the restriction on the amount of funds that you can use.

If you do choose to submit a pilot study that would be considered a fully powered Efficacy study, then I would talk with your Program Officer. We would want you to design a study that would meet our What Works Clearinghouse requirements for Efficacy studies, which have some very specific requirements regarding power, design, and sample size and things like that. Again, it's a range of rigor that can be used for the pilot study. It will depend very much on your particular intervention. Talk with your Program Officer about what is going to make the most sense, given your research goals.

## Measures

- Procedures for collecting data
  - Often includes collection of process data using observational, survey, or qualitative methodologies
- Measures to be used
  - Including reliability and validity information, where appropriate
- Measures of fidelity of implementation

Finally, in terms of measures, it's really important for people to be specific. Be sure you describe all the kinds of measures you're using to collect the data. If you're planning to process data using observational surveys (i.e., qualitative methodologies), you need to make sure that you describe what that's going to look like. If you have a sample observational checklist or if you have semi-structured interview questions that you're proposing to use, these sorts of details can be useful. You have some room in the Appendix, where you can include some of that information. Definitely include reliability and validity information. Reviewers will look for it and, of course, measures of fidelity of implementation.

## Measures

- Give careful consideration to measures of student outcomes
  - Measures sensitive to intervention
  - Measures of practical interest to education policymakers and practitioners

Give careful consideration to the measures of student outcomes. You can clearly use measures that are sensitive to the intervention, but you should also consider measures that are of practical interest to education policymakers and practitioners, their change in student performance on the State tests, their school level of disciplinary referrals, etc.

## Four Sections of the Research Narrative

- Significance
- Research Plan
- **Personnel**
- **Resources**

The final two sections of the Research Narrative are Personnel and Resources. Both of these do go in that 25-page Research Narrative. You need to include descriptions of qualifications, rules, responsibilities, and percentage of time to be devoted to the project for all key personnel. You don't want to make the mistake of not including this section or not including enough information in that section. Reviewers will clearly look at CVs and information that's included in other parts of the application, but you also want to make sure that you spend some time describing the qualifications of the key personnel in the Research Narrative.

## Personnel Section

- Describe key personnel
  - Show that every aspect of project has person with **expertise** to do it
    - Appropriate methodological expertise
    - Substantive person for all issues addressed
    - Do not propose to hire a key person with X expertise
    - Project management skills
  - Show that every aspect of project has enough **time** from expert
- Orient CVs so specific to project
  - 4 pages plus 1 page for other sources of support

Make sure you have a good mix of individuals on your team. When thinking about the tasks involved in the Development process—from the initial development, the feasibility testing, the pilot testing—you want to make sure that the mix of individuals on your team have all the expertise needed to carry out all aspects of that project. You want folks who have content expertise. Make sure you have the appropriate content expertise for your particular area. You also need methodological expertise that's required for conducting the study. That may vary depending on what you're proposing to do and on the rigor involved in your pilot test.

Finally, you're going to need to have personnel who have demonstrated experience working in schools or other education agencies. In my program, I get a lot of folks who have more experience in clinic settings, which is fine, but you want someone on your team who has experience and understands what it's like to work in schools.

Try and get your folks to orient the CVs, so they're specific to the project. It's very easy to do a generic one, but the reviewers really do comb through those CVs to make sure that the key personnel indeed have adequate expertise for the project based on work experience, publications, and other background described on their CV.

## Personnel Strategies for PI

- **Senior Researcher as PI**
  - Show adequate time to be PI
  - Make credentials clear (not all reviewers may know)
- **Junior Researcher as PI**
  - Show you have adequate expertise not only to do work but to manage project
    - Continuation of graduate research
    - Management skills as graduate student
  - Reviewers more comfortable if you have senior person(s) on project to turn to for advice
    - Co-PI, Co-I, contractors, advisory board
    - Have them on for enough time to be taken seriously

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If you're a Senior Researcher, one pitfall is making sure that you argue that you have adequate time to be principal investigator (PI). Make your credentials clear. You may think folks are just going to know what you have done, but you're speaking to a wide range of reviewers who may not know your particular qualifications.

If you're a Junior Researcher, show that you have adequate expertise not only to do the work, but to manage projects. That's part of having a federal grant—not only doing the work, but being able to manage people and a project. So, if you have experience doing that, be sure to show that. Honestly, reviewers are more comfortable if you have a senior person to turn to for advice, and that person is listed as a Co-PI. You could have an advisory board, Co-Investigators, or other contractors who have had experience running federal grants. Give those folks enough time to be taken seriously. If you put someone on as a consultant at 2% and you're a new PI, they're not going to think you're really going to get the support that you need from that senior person.

## Resources

- Show institutions involved have capacity to support work
  - Do not use university boilerplate
- Show that all organizations involved understand and agree to their roles
  - What will each institution, including schools, contribute to the project
  - Show strong commitment of schools and districts and alternatives in case of attrition
- If you have received a Development grant, describe whether it led to further research

For Resources, include information about the support that you have at the institution where you're going to be carrying out the research. Talk about any technological support that you have on hand that you're going to need. Show that all the organizations involved understand and agree to their roles. Have Letters of Support from participating schools or teachers to show that they understand their specific commitment and the work that they are going to be doing as part of participating on your project.

## Resources (cont.)

- Appendix C should back this up
  - Detailed Letters of Support from research institutions, States, districts, schools

Appendix C should back this up with Letters of Support, so they need to show that your schools and district know exactly what they're going to do. Try not to use the same exact letters. Reviewers notice it and question whether the schools really understand their commitment, when every letter is exactly the same.

## Additional Considerations If Seeking a Second Development Award

- *If you have had other Development awards and you want to develop a **new** intervention, you should:*
  - Indicate whether first intervention has been evaluated for efficacy and describe results (if available)
  - Show that previous intervention improves or shows promise for improving education outcomes

One quick additional consideration: If you're seeking a second development award to develop a new intervention, reviewers want to know: *What did you do with that initial development work? Did you publish off of it? Did you move it to an Efficacy study? What's happening?* We want to support folks who do good development work but then also take it to the next level.

## Appendices

- **Appendix A** (15 page limit)
  - Figures, charts, and tables
  - Examples of measures
  - 3 pages to address past reviewer comments or to argue that a proposal is a new submission
- **Appendix B** (10 page limit)
  - Examples of materials used in an intervention or assessment
- **Appendix C** (no page limit)
  - Letters of agreement (districts, schools, data providers, other partners, consultants)

Appendix A is just a 15-page limit ability. You can add in additional figures or charts or tables that support your Research Narrative—not in place of what should be in the Research Narrative, but that would support what you have there—maybe examples of measures. If you have a resubmission, you're required to use up to three pages to address past reviewer comments or to argue that a proposal is a new submission. Sometimes with a resubmission, it's so drastically different from the initial one that it might be considered a new submission. You need to make the case for that, otherwise it will be considered a resubmission.

Appendix B is for examples of materials used in the intervention or assessment. You have 10 pages to put additional materials there.

Appendix C has no page limit and this is where you add those Letters of Support.

## Budget and Budget Narrative

- Provide a clear budget and budget narrative for overall project and each sub-award
- IES Grants.gov Application Submission Guide describes budget categories
- Check RFA for specific budget requirements for Research Goals and Grant Programs
- Ensure alignment among Research Narrative, Budget, and Budget Narrative

Provide a clear Budget and a Budget Narrative for your overall project as well as any sub-awards that you have. There's an IES Grants.gov *Application Submission Guide*, which is extremely helpful and available on our website. It describes the application process in general, but also describes the Budget categories in more detail for you. Be sure to check the RFA for specific budget requirements for the research goals in the grant programs. Make sure that there's alignment among your Research Narrative, Budget, and Budget Narrative. What your Budget says you need should make sense, given the research and the work plan that you just laid out in your Research Narrative.

## Awards

- Maximum of \$1,500,000 total cost (direct + indirect)
- Maximum of 4 years
- **Applications proposing more than a maximum will not be accepted for review**
- In budget narrative, note budgeted cost of pilot study to ensure it does not exceed 30% of total funds

Development grants have a maximum of \$1.5 million, and that's total cost—direct and indirect. There's a maximum of 4 years. The applications proposing more than a maximum will not be accepted for review. If you go over that total budget, you will not even move forward to be reviewed. In the Budget Narrative, note the budgeted cost of the pilot study to ensure that it doesn't exceed the 30% of the total funds.

That maximum of 4 years is new this year. If you're developing a curriculum that lasts an entire year or you need more time for the pilot test, because there are proximal outcomes to be affected before the distal student outcomes are changed, you have a little bit more time to try and get at that student outcome piece. You really need to justify applying for a 4-year award. Our typical Development grants are 3 years. If you do want it for longer, you have to make the argument for why you need 4 years.

## Agenda

- Introduction to IES
- Education Research Grants (84.305A) and Special Education Research Grants (84.324A)
- The Development & Innovation Goal
- Four Sections of the Research Narrative
  - Significance
  - Research Plan
  - Personnel
  - Resources
- **Application Submission and Review**

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I'm just going to run through this last application submission and review piece. There have been other presentations that have gone through this as well, and so there is additional information on the website about the application submission and review process.

## Important Dates and Deadlines

FY 2013 NCER (305) & NCSER (324) Grant Programs	Application Deadline	Letter of Intent Due Date	Application Packages Posted	Start Dates
305A: Ed Research 324A: Special Ed Research	6/21/12	4/19/12	4/19/12	3/1/13 to 9/1/13
305A: Ed Research 324A: Special Ed Research	9/20/12	7/19/12	7/19/12	7/1/13 to 9/1/13

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We have two application deadlines—June and September. The other dates are for Letters of Intent (LOI), which are requested but not required. Please do submit one, if you think you are going to submit an application. You can submit a LOI and then choose not to submit an application; that’s fine. There is no strategy to submit in June versus September. We fund quality applications whether you come in June or September.

## Information for Applying



<http://ies.ed.gov/funding>

- Requests for Applications
- Letter of Intent
- IES Grants.gov Application Submission Guide
- Application Package

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On our website, you can find our RFAs, which detail all the requirements for the Development & Innovation projects as well as the grant topics. Information about the LOI is in that IES Grants.gov *Application Submission Guide*, which you want to download as well, when accessing the application package.

## Grant Submission

- Make sure your institution is registered on Grants.gov
- Complete your online forms and upload PDFs
- Authorized representative completes the process
- Submit by 4:30:00pm DC time on deadline – earlier is safer
- If problems uploading
  - Contact Help Line 1-800-518-4726 and get a case number

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For grant submission, if you're new to submitting, make sure your institution is registered on Grants.gov. Check this site really early, because it can be a process to register.

Your authorized representative, your Grant Office, is actually the one who completes the process and hits the submit button. Make sure to get your information to them in plenty of time to allow them to do what they need to.

When you do submit your grant, it is due by 4:30 p.m., Washington, DC time, on the deadline date. We don't mean 4:30 p.m. and 1 second. It is exactly 4:30 p.m., and there is no wiggle room with that. So, start early. Don't start trying to upload all your documents at 4:20 p.m. If there are problems uploading, you want to know that in plenty of time. You should call the helpline for the Grants.gov folks. You should get a case number and they can track it. They can help you through those things, provided you're not trying to do this just a few minutes before that 4:30 p.m. deadline.

## Verification of Submission

- You should receive three e-mails
  - Grants.gov will say they have received your submission and assign you a number that starts with GRANT
  - Grants.gov will say your application is validated or rejected due to errors. If the latter, resubmit until validated.
  - Department of Education will assign you a grant number starting with R305 or R324

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You'll get three e-mails that will verify that you have submitted your grants. You'll get an e-mail from Grants.gov saying they received your submission and assigned you a number that starts with "GRANT." Then, you'll get an e-mail from Grants.gov saying your application is validated or rejected due to errors. If it's rejected, you can resubmit it until it's validated. It might be a very simple fix. Again, start early, so if you run into any of these problems, you can get it resolved in plenty of time.

## Application Review (Standards & Review Office)

- Compliance screening for format requirements
- Responsiveness screening to program/goal requirements
- Assigned to review panel
  - 2-3 reviewers (substantive and methodology)
  - If scored high enough, application is reviewed by full panel
    - Many panelists will be generalists to your topic
    - There will be an expert in every procedure you use
  - Overall score plus scores on Significance, Research Plan, Personnel, and Resources
  - So far, all applications with overall score of Outstanding and Excellent have been funded
- Resubmissions encouraged: Talk to program officer and address reviewer comments

Finally, you'll get a notice from ED saying, "*We have received your grant,*" and you'll get an IES number assigned to it.

Here is a quick overview of the application review. They're first reviewed for compliance with format requirements. In the RFAs, there are details about font size, about page borders, etc. (what needs to go into the application). You will be screened to see if you actually comply with those requirements. Your application is then screened for responsiveness to the basic program and goal requirements. *Do you meet those basic requirements within your topic and this Development & Innovation goal?*

Your applications are then assigned to a review panel. You will be assigned two to three primary reviewers and they're going to have the content and methodological expertise to review your application. If your average score is high enough, your application is going to be reviewed by a full panel of experts. Many of the panelists will be generalists to your topic, so they may not know the ins and outs of your particular field but there will be an expert in every procedure that you use on your application. Then, your applications are scored for each section (i.e., Significance, Research Plan, Personnel, and Resources). Resubmissions are definitely encouraged, so talk to your Program Officer and address any prior reviewer comments. Right now we do not have a limit on resubmission.

Award decisions are based on a variety of things, including the scientific merit as determined by the peer review. That peer review process is really getting at the scientific merit of the application. How well did you make the argument? Was it convincing? Is it a strong research plan?

Any performance and use of funds under a previous federal award may play into award decisions as well as the contribution of the overall program of research, and the availability of funds, which every year seems to get tighter and tighter.

## Peer Review Process Information



Standards & Review Office  
Legislative Background | Peer Review Process

[http://ies.ed.gov/director/sro/peer\\_review/index.asp](http://ies.ed.gov/director/sro/peer_review/index.asp)

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There is a link here on our website to the peer review process information. All of this information is detailed for you, if you want more information about that review process.

## Notification

- All applicants will receive e-mail notification of the status of their application
- All applicants receive copies of reviewer comments
- If you are not granted an award the first time, plan on resubmitting and talk to your program officer

Once you submit it, all applicants will receive e-mail notification of the status of their application once everything is reviewed. All applicants will receive copies of reviewer comments. If you are not granted an award the first time, plan on resubmitting. Talk to your Program Officer about how to best address those reviewer comments.

## Additional Webinars Available

<http://ies.ed.gov/funding/webinars/index.asp>

- Basic Overview
- Application Process
- Grant Writing Workshops for each goal
- Grant Writing Workshops for early career researchers and minority serving institutions
- Overviews of research training programs
- Overviews of NCSER funding opportunities

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I mentioned earlier there are additional webinars available on the website for you: the Basic Overview; a detailed webinar on the Application Process itself, which is helpful if you're new to IES; the Grant Writing Workshops for each goal; the Grant Writing Workshop for Early Career Researchers for those early career researchers as well as minority-serving institutions; overviews of the Research Training Programs that are also here at IES that we didn't talk about at all today. There is going to be a general overview of NCSER funding opportunities. Our Commissioner is going to give an overview of some of the NCSER opportunities that are available and perhaps coming up.

## For Further Information

<http://ies.ed.gov/funding>

- Contact the program officer for the topic under which you intend to apply:
  - Available in the Request for Applications
  - [http://ies.ed.gov/funding/ncer\\_progs.asp](http://ies.ed.gov/funding/ncer_progs.asp)
  - [http://ies.ed.gov/funding/ncser\\_progs.asp](http://ies.ed.gov/funding/ncser_progs.asp)

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For further information, peruse our website. Definitely contact the Program Officer for the topic for which you intend to apply. Within the RFAs is all of our contact information tied to the different topics. Don't hesitate to contact us. Again, we have that firewall between the review process and us. We can help you as much or as little as you wish in your endeavors.

## For Further Information

[Jacquelyn.Buckley@ed.gov](mailto:Jacquelyn.Buckley@ed.gov)

[Emily.Doolittle@ed.gov](mailto:Emily.Doolittle@ed.gov)

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Our e-mail information is here as well, if you want to just e-mail us we can direct you to the appropriate people. If we did not get to your questions today or if you have additional questions that you think of once the webinar is complete, please send them directly to me or anybody associated with the topic you're interested in applying to. We will do our best to answer those questions.

Thank you for taking the time today and we wish you the best of luck in your endeavors of creating some Development & Innovation grants for us. We will look forward to working with you.

This concludes today's webinar, the Grant Writing Workshop for Development & Innovation Projects, part of the Research Funding Opportunities webinar series. Copies of the PowerPoint presentation and a transcript for today's webinar will be available on the IES website shortly.

Thank you and have a wonderful day.