



Institute of Education Sciences **Funding Opportunities Webinar** Grant Writing Workshop

April 19, 2011

U.S. Department of Education

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EDUCATION SCIENCES

**IES Funding Opportunities Webinar:
Grant Writing Workshop
U.S. Department of Education
Institute of Education Sciences**

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**Transcript
April 19, 2011**

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Thank you. I'm Allen Ruby. Good afternoon, and thank you for joining me today to talk a bit about grant writing for IES grants.

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Our agenda today is I want to give a short introduction to IES and then provide an overview of the grant programs that will be available for this year and where to obtain information on them. Then I want to go into great detail on two of our grant programs, the Education Research Grants and Special Education Research Grants, because these are the two grant programs from which most of our grants are provided; and secondly, they're a bit more complex than the other grant programs because they contain a set of topics and research goals, and every application must address one topic and then one research goal.

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After that, I'd like to go into the research narrative, which is the heart of your application, and to talk about the four sections of that narrative. And following the discussion of the four sections, go back to the other grant programs that are available, give some detail on them, and then round it out with some information on making a submission and the review process.

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So let me start with a little bit about IES.

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So we have a Director, and he is advised by a National Board for Education Sciences. Both of them are appointed by the President with the consent of the Senate. And within IES we have four centers. First, the National Center for Education Statistics. You may have worked with the data they collect, such as the National Assessment of Educational Progress, or your students may be working with that data on their dissertations.

Second is the National Center for Education Evaluation. This center funds large evaluations through contracts, usually through large research institutions at the request of Congress, at the request of the Department of Education, and sometimes if an issue they feel is very important, they will fund an evaluation of it. So, for example, right now they are very busy doing evaluations of some of the stimulus funding that was provided through education.

Then there are the two grant-making centers, the National Center for Education Research—I'm within that one—and the National Center for Special Education Research. And this is where the program officers are housed who can work with you. And because we work with you closely, we are not involved in the peer review process of your application. The peer review process is run by this other office that comes off the Office of the Director, known as the Office of Standards and Review. They choose the peer reviewers and they run the whole process, and so that allows us to be separate from that, which allows us, then, to spend more time working with you on your application.

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So what are our research objectives here? Why are we funding grants? Primarily, we can sum this up as four questions: Trying to find out what works to improve student education outcomes, so we can disseminate this type of information; secondly, to identify what doesn't work so we can stop using these types of things; thirdly, to identify what works for whom and where, because we know not everything works for everybody or works in the same way in every place so that we can use things with the appropriate people and the appropriate places; and finally, why do these things work? This would give us a better theoretical understanding of how to improve education and allow us to build further on that understanding.

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When I talk about what works or what doesn't work, I really mean in terms of student outcomes. Is this something that improves student outcomes or not, and this is key when you're writing an application to IES. Our research is to be focused on student outcomes, so you'll all need to include student outcomes in your work. Now this makes certain types of research challenging. If you're working very upstream of students, if you're working at the superintendent level or, for example, school boards, or even at the principal level, it's sometimes hard to make the track all the way down to impacting students. But to do the type of research supported by IES, you need to make that connection.

So specific outcomes listed on this slide—you can see in preschool education, the outcome is school readiness. If you're working in special education, you can start working from infancy with children who are born with disabilities. The K to 12 focus is on academic outcomes in reading, writing, math, and science; behaviors; interactions that support learning; and for special education students, support their transitions to post-school opportunities for high school graduation; and then, again, for special education students for functional outcomes that will improve their results and their transition to employment and independent living.

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Continuing on with outcomes in the postsecondary area, they are access, persistence, and completion of postsecondary education. This year we have actually added some new outcomes looking at course achievement, and we're focused now on gateway math and science courses, these are the courses that lead to or are required to major in math and science in postsecondary, as well as achievement in introductory composition courses. This is about interest in getting students to learn how to write better in college. And then in adult education we have reading and writing and math for both basic and secondary education, and as well as English language learners.

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So that takes us through the intro to IES, so now I want to give sort of the mile-high view of the IES grant programs, just a quick overview so you're familiar with them and where to get additional information on them, and then we're going to come back and cover the grant programs in detail.

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So this is a listing of the grant programs. I have separated out the first two, Education Research Grant Program and Special Education Research Program, because they are the most important programs, our largest programs. But then you can see we also have post-doctoral training programs, we have research and development center programs, and statistics and research methodology and education, and evaluations of State and local education.

Let me take a moment to decode the numbers that are next to each grant program. These are called the "Catalog of Federal Domestic Assistance" or "CFDA" numbers. CFDA numbers that start with 305 identify grants for IES' regular education grant programs. Those that start with 324 identify special education grant programs. CFDA numbers also end with a letter which identifies the actual grant program. Those that end with the suffix A are for the education research grants programs (both regular education and special education). Those that end in B are for the Post-doctoral Research Training Grant Programs. Those that end in C are for the Research and Development Center program. So you see that for suffixes A, B, and C, we have regular education and special education grant programs. The suffixes D and E are only for the regular education grant programs in Statistics and Research Methodology, and Evaluation of State/Local Education Programs and Policies. You'll use this code to identify the correct application package to download and complete for your application.

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Key dates for this year: you can see we have two application deadlines, but only the regular Education Grant Program and the Special Education Grant Program are for both these deadlines. The other grant programs have only one grant deadline, and we'll go over those when we get to them. So we will need your application by either June 23rd or September 22nd for it to go to the review process. We ask for a letter of intent and that letter is submitted at this website. The actual application package you use to apply is available at this website, and it will be posted at these dates, and then your start dates. Your earliest start date could be either March 1st or July 1st. That's also the formal date that you'll be notified if you got the grant as well.

Just one thing to note is the earliest start date is not always the best time to start. For example, if you're going to hire post-doctoral or graduate students, March 1st is a terrible time to find these people and hire them. We have had many projects that say they're going to start March 1st, realize they can't hire someone, and so they end up really truly starting June or July 1st, when these people become available to hire. So think about what's the best date to start for your project.

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So let me just take a few minutes to talk about where do you get information for applying, and there's really four sources—the Request for Applications, the Letter of Intent, an Application Submission Guide, and an Application Package.

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There is a separate Request for Application for each of those grant programs I went over, and they describe in great detail the requirements for an application. They're available on this website. They're posted every year with slightly different dates, usually late winter/early spring. If you want to be informed about the release for future RFAs you can sign up for the IES News Flash at this address.

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One other thing, let me say about the Request for Application. This talk today is based heavily on the Request for Application, so I'll constantly be reiterating that you should go back and read the Request for Application, because there are specific details that I won't be able to cover today.

You would submit the Letter of Intent at this website. It's a very short description of your intended application. You should not spend a great deal of time on it. Just saying who you are, what's your institution, possible collaborators, a very rough estimate of your budget, up to one-page abstract describing the work. The Letters of Intent are used in two ways: one, we the program officers read them and we respond to them, give you feedback on your idea, and offer you time to talk with us more about it; secondly, the Office of Standards and Review, which is in charge of the peer review process, uses them to estimate the number of peer reviewers they'll need and the specific areas of expertise they'll need.

At the same time, you're not held to what you write in the Letter of Intent. It's not used in the review process. It's superseded by your application, so you may change institutions, you may change collaborators, you may change the scope of work, etc. That's fine. Everything is superseded. One point about the Letter of Intent: please do submit it at this website. It shouldn't be emailed to the program officers because then it doesn't go through the system. The other point is, if you miss the LOI deadline, you can still apply. You don't have to get special permission to apply, but at that point, it might be worth sending a paragraph about your project to the right program officer so that they can talk to you as if you had sent in the Letter of Intent.

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The Grants.gov Application Submission Guide—this is going to walk you through submitting the application package. It will be posted at about May 1st at the same site as where the Requests for Applications are posted. It's really worth going through this submission guide. The application package is for all Federal grants. That means it's not specific to our grant program. That means it has a lot of generic language that may not be clear to you. This Submission Guide will walk you through that language and will help prevent any errors in your application. Because if you try to submit an application with errors in it, it will bounce back. And if you're submitting very close to the deadline, it may not bounce back in time for you to resubmit. So it's worth avoiding the errors by going through the Submission Guide.

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And then the packages, they're available at Grants.gov. And just as caveat, Grants.gov is not part of IES, so we can't make things work if it's not working. You need to talk to the help line and the supports there. It contains all the forms you need to fill out and submit as part of your application. As I mentioned, it's generic, and you can identify the correct package using those grant numbers we talked about, 84.305 and 84.324, and then looking for the right suffix A to E.

You'll notice that they're posted so you can't use the wrong package to submit. So those for the June deadline are posted in April. Those for the September deadline are posted in July. That way you can't use a June package to apply in September, and they're specific for the grant program and deadline.

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Who can apply? It's very wide open. If you can show that you have the capacity to do the research and to manage a grant and that the institution can do the work; and the institution registers for applying for a grant on Grants.gov, then you're eligible to apply. Those are really the only two requirements.

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So just to reiterate how to identify that you're in the appropriate grant program: read the Request for Application, also, we have posted abstracts from the projects we have already funded, so you may want to look through those to see what type of work is being done and how it was posed, and then talk to the appropriate program officer. As I mentioned, since we're not involved in the review process, most of our job is talking to applicants and potential applicants. And the list of program officers is in the Request for Application.

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So moving on in the agenda. Now I would like to focus on the two main grant programs, the Education Research Grant Program and the Special Education Research Grant Program. I want to look at the two parts to them, the topics and the research goals.

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So let's start with the grant topics. All applications under these two grant programs have to be directed to a specific topic, and it's very important to note the topic at the top of your application in several places so it goes to the right peer review panel, because different peer review panels handle different topics. On your cover sheet the SF 424 Form under Item 4B you're supposed to put in the topic. This is something that's listed in the Grant Submission Guide. But it's also helpful to list the topic at the top of your abstract and then the first page of your research narrative, again, just to make sure it goes to the right review panel.

In Education Research you will see there are 10 specific topics, and in Special Education Research there are 11 topics.

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Let's take a look at the 10 Education Research topics. On the surface, most of them are fairly self explanatory: Reading and Writing; Math and Science Education; Cognition and Student Learning—so how do people learn and how can we use that in education; Social and Behavioral Context—so how can we improve conditions in the classroom so that students learn; Education Technology; and Effective Teachers and Effective Teaching—this is a little bit changed from last year when we merged two separate teacher quality program topics, one on math and science, and one on reading and writing. And also a lot of the policy for teachers such as teacher credentialing, teacher recruitment, teacher retention, and certification can be studied under this Effective Teachers topic.

Improving Education Systems—this also is a merger from last year, where we had several different program topics: Education Policy, Finance, and Systems; Education Leadership; Organization and Management of Schools and Districts; and Analysis of Longitudinal Data to Support Education Reform.” So here you're really looking at a higher systems-level-type work. We also merged Postsecondary and Adult Education together. Finally, we have Early Learning Programs and Policies and we have English Language Learners as separate topics.

So those are the topics that you would submit your application under.

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We have a couple of examples here to test your knowledge. So if you looked at the purpose, this purpose is part of a typical abstract and you looked at the purpose for a grant we're funding now, the study will examine the association between aspects of preschool quality and child health, behavioral and cognitive outcomes. Where do you think this was submitted to? The giveaways here: preschool quality and school-based early care and education programs. So this one is under the early learning programs and policies topic.

Another example; the purpose of this research is to test several possible ways to influence participation in college saving plans and subsequent savings behavior. What topic would you imagine this one would fall under? Key phrase, "college savings," so this would fall under postsecondary and adult education.

A third project going on now—this study will provide a detailed examination of factors that predict gender difference in elementary school mathematics performance. Last words—mathematics performance, so it would fit under math and science education. And the last one, this project is designed around findings from a local needs assessment of teachers, which found a need for more support for laboratory work, greater access to subject matter experts, and a strong desire to plan together. So what topic do you think this one would fall under? It's really trying to improve—it's in response to what teachers say they need to improve their own teaching, so it would fall under effective teachers and effective teaching.

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So moving over to the Special Education Research topics, you see there are 11 of them. Many of them are very similar to the regular education project topics: Early Intervention and Early Learning; Reading and Writing and Language; Math and Science; Social and Behavioral Outcomes; Cognition and Student Learning; well, Professional Development for Teachers and Related Service Providers is slightly different; Special Education Policy, Finance and Systems, which is very similar to the Improving Education Systems; and Technology for Special Education.

Some of them, however, are very specific to special education. There are Transition Outcomes for Special Education Secondary Students and the Autism Spectrum Disorder topics, as well as Families of Children with Disabilities. These are very unique for the Special Education Research Grant Program.

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So let's do the same thing we did before; try to put a couple of these purposes from the abstracts into their topics. The first one is sort of a giveaway because of the phrase "social and emotional learning foundations," so this one would fall under the topic Social and Behavioral Outcomes to Support Learning.

The second purpose is to provide guidance for speech language pathologists by examining how the dose, techniques, and contexts are associated with language outcomes. Well here you're working with a provider, so it would fall under the Professional Development for Teachers and Related Service Providers. And the last purpose allows States to create modified academic achievement standards that are challenging for eligible students but are less difficult than the grade level achievement standards, and this project is to develop and validate an assessment based on those standards. So this is really a policy issue. It's much broader than an individual classroom issue, so it would fall under the Special Education Policy, Finance and Systems topic.

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While on the surface topics may seem clear, there are some issues that come up with them, and it's important to keep these in mind. There are going to be special considerations, so it's worth, again, when you've figured out what topic you want to work under, to read it in detail in the Request for Applications to find out whether there are other issues you need to be aware about. So, for example, as I mentioned, all grants have to address student outcomes. So, again, when you're thinking about a project, let's say, under Effective Teachers, some people think, well, I just want to look at do teachers teach in a certain way. But it's not going to be enough to say teachers are teaching in a certain way. You also need to determine what is the impact or the relationship of teaching in that way to student outcomes. So you have to make the link, even though you're not working directly with students.

Secondly, grade range coverage varies by topic. Most of the topics are for K to 12 students only. And here I'm talking about the Education Research Grants. I'll talk about Special Education on a separate slide. Early Learning is working with ages 3-5 and their teachers, except in the case if you're following students from pre-K up into elementary school. It's your choice then, where you think it's most appropriate to apply. If you want to look at outcomes in later elementary school but you want to start in pre-K, it may be worthwhile to start in another topic. Let's say you're looking at math outcomes, then you might want to apply under Math and Science.

Education Technology, though, goes from pre-K up through adult, except for science, where it stops at grade 12. Cognition goes from pre-K to adult, and the Postsecondary and Adult Education topic is obviously for older students. But another wrinkle here is if you're looking at a program in high school that's major outcomes are to get students to go to college or to succeed in college, then you would apply to the Postsecondary and Adult Education topic because your primary outcomes are occurring at the postsecondary level.

Another point about postsecondary research is that it's limited to sub-baccalaureate and baccalaureate programs; we're not looking at Masters or PhDs or professional programs like lawyers or architects. For Adult Education research, we are looking at adult basic, adult secondary, and English language learners.

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Some more issues about the topics: The Improving Education Systems: Policies, Organization, Management, and Leadership topic is very broad, including anything to address the overall functioning from a school up to a national education system. We combined these into one topic because many of the previous applications were including interventions that included several of these approaches. It was difficult for applicants to decide, if they had both an organization approach and a leadership approach, where was the most appropriate topic to apply to? So we have just created one topic for them to apply to.

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Topics often overlap, and one of the biggest issues to figure out is if, say, I want to improve mathematics in elementary school, am I trying to improve teaching, or should I fall under the Math and Science topic? And the issue really is—what are you doing? If you're creating a new curriculum or new instruction approach, that would fall under Math and Science. On the other hand, if you're creating or testing a professional development program that's to improve the teacher, that would fall under Effective Teachers and Effective Teaching. So that overlap is a little clearer.

If you're applying cognitive science to teacher practice, it may be more relevant to apply under the Cognition and Student Learning topic than to the Effective Teachers topic.

If you're only working with pre-K teachers, then you should apply to Early Learning.

If you're working with teachers of English language learners, you could apply either to Effective Teachers or to English Learners.

And, of course, if you're applying to research such things as teacher certification recruitment and retention, which are broad issues, you could apply to Effective Teachers or you could apply to Improving Education Systems.

The point I'm trying to make here is that because there is a bit of a complexity here, it's worth both reading the request for application and talking to your program officer to find the best place to apply.

Going on to Education Technology, it just overlaps with every program. If you're going to develop an Education Technology intervention to improve reading or writing or to improve teaching of reading and writing, you could apply to Education Technology or you could apply to Reading and

Writing or you could apply to Effective Teachers. The issue here is really, what is your focus? Does your team really consist of technology people or are they more reading and writing people? Then, that may lead you to go to one or the other. If they're a combination, you may go to either one.

The English Learners topic overlaps, as we mentioned, with the Reading and Writing and the Math and Science topics. The key issue here is, are English learners the primary focus or a secondary focus of your work. Based on that answer, apply to the appropriate topic.

And Improving Education Systems, because it's so broad, it overlaps with many of the programs except for Early Learning Programs and Policies, and Postsecondary and Adult Education.

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So how should you choose? Basically what's your background, what literature are you citing, and which topic is your area of expertise best aligned? As I mentioned, if you're a tech person, you're probably better aligned to the Education Technology topic. If you're a reading person, you're probably better aligned to the Reading and Writing topic.

Also, are you looking at a specific population or is it just a sub-population of the group you're looking at? So if English learners are the only focus of your work, the English Learners topic is probably the best place to go. If you're looking at all learners, but as a subgroup, you'll also look at English learners, then you probably don't want to go to the English Learners topic.

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One other issue that comes up also is what about pre-service programs. Currently, this year, we'll be supporting exploratory research on teacher pre-service programs. We're not developing pre-service programs, we're not evaluating them, and we're not developing measures for them. Another approach you could take, though, is to develop or evaluate a component that could be used in a pre-service program, but you would do it with in-service teachers. And for leadership, the Improving Education Systems topic will support work for pre-service leadership programs if they last less than 24 months.

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Let's talk about a little bit about special education topics and some issues specific to them. How do we define children with disabilities or at risk for development disabilities? Well that's based on an individual assessment of the student. It's not a population characteristic. Even though, for example, low SES students may be more at risk of developing certain disabilities, that's not what's used as a criterion here. So you need to be specific about your disability and what inclusion and screening criteria you will be using. For three of the topics, the student must have a disability. They can't just have a risk for it, and that would be for Transition Outcomes, Autism, and Families of Children with Disabilities.

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Grade coverage varies by topic, again. Most of the topics are K to 12, but as you can see, some of them differ. Early Intervention runs from infancy to age 5, and other topics have different grade levels, so keeping that in mind as you do the work.

And then overlap: Autism and other topics overlap quite a bit because autistic kids can receive reading and writing or math and science. So the way to differentiate between topics is whether you're looking at a single outcome for students with autism? In that case you could go to that outcome's topic such as Math and Science. If you're looking at multiple outcomes, then you would go to the Autism topic.

For the Early Intervention and other topics, just like in regular education, if you want to follow pre-school students up to later grades, then you can decide which is the better topic for you, But if you're only looking at them in the early infancy to pre-K, then you need to apply under Early Intervention.

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So just in your own mind now, take 5 seconds and say to yourself, okay, where do I think my research question falls? And if you're not sure or you had to think a little longer or you think there could be several topics, then I'd give you the typical advice: read the topics in the Request for Application that you think are correct and then contact the program officer for one of those topics. If there is an obvious overlap, that program officer will bring in the other relevant program officers, and you can have a joint discussion about where your research best fits.

So I'm going to move on now to research goals, so if anyone had a question on topics, this would be a time to send it in.

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But for now, I'll just go onto our grant research goals. Again, you have to apply under one of our five research goals. Again, you list this. You want to note this on your application. So you're going to list what topic and what goals you're applying to. The research goal actually describes the type of research you'll be doing. Every application is aimed at a specific topic and goal and the review will be actually led by people who are expert in that topic and goal combination.

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Again, we have five goals, and we'll just walk through a bit on each one of them, from Exploration up through Measurement.

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And I'll start with Exploration, that is exploration of the association between education outcomes and malleable factors. The key term here is “education outcomes.” So those we talked about earlier. Those were the student outcomes we started with within this webinar.

Malleable factor is one of these fuzzy terms, but it means something that can be changed by the education system. This can be anything from a student, teacher, or school characteristic; program; or policy. Some examples that are cited in the RFA of malleable factors are:

- underlying processes that enhance or inhibit learning;
- some sort of aspect of a school district or community that is associated with beneficial outcomes; or
- an actual intervention that is associated with beneficial education outcomes.

I just want to reiterate that this is not to be a causal analysis. You're not trying to prove a causal relationship. You're only trying to identify that a relationship appears to exist here.

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One other thing you can do under exploration is—rather than looking at a relationship of a malleable factor with an education outcome—look at what factors mediate or moderate that relationship.

The typical type of work supported under these grants are primary data collection and analysis, secondary data analysis, and meta-analyses.

You can see the grant amounts here for secondary data analyses typically run \$100,000 to \$300,000 per year. That includes direct and indirect costs. It's a maximum of 2 years and a maximum of \$700,000 total. This is the first year we've ever put a maximum budget on our grant program, so it will be important for people not to go over the maximum. Applications that go over the maximum may be rejected for being non-compliant and non-responsive. If you include primary data collection analysis—you can do either just primary data collection and analysis or primary data analysis plus secondary data analysis—we give you more time and slightly more money, with a maximum of 4 years and \$1.6 million.

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So let's test your understanding of the Exploration topic based on that. If you were a program officer and someone called up and said, “I want to know, do middle school girls score higher on English achievement test than boys?”—would that fit? The issue here is what's the malleable factor being posed? In this example, it's really gender or sex. It's asking, “Do girls score higher than boys?” And so we would say, “No,” to this research question, because the education system is not in a position to manipulate that malleable factor.

Another example could be, “Is hands-on science teaching associated with better grades for boys? Does that fit under Exploration?” Here we’d look here and say, “What’s the malleable factor?” And it’s how we’re teaching hands-on science. Now that is something the education system can manipulate. You can teach using hands-on science or teach through another approach. If we manipulate that factor, do we see better outcomes for boys, yes, or no? So that fits under Exploration.

If we go back to the first question then, we could change it a bit. We could say, “Do middle school girls score higher on certain types of achievement tests than boys, or does teaching middle school girls in certain ways lead to higher achieved tests teaching in other ways versus boys?” We need something that the education system can manipulate.

The next example: Is increasing foster care payments linked to better academic outcomes of foster children? The outcome is certainly relevant, but the manipulable factor here is increasing foster care payments, and that’s outside the control of the education system. So that would not fit under Exploration.

Somebody asked,

Question: *“Can the secondary data analysis I referred to on the earlier side, can that be done on data used from multiple prior data collections?”*

Answer: *It certainly can. If you’re using a well-established secondary data source such as a State longitudinal system or a national system, or if you’re using data you collected yourself from an earlier study, either one is fine. You just need to be very clear. If you’ve done it on your own data, you’re going to have to be very clear what that data is and the validity and reliability of that data.*

Another example: If somebody called you up and said, “I want to study whether the Bluebird reading curriculum causes higher student achievement on reading tests.” Well, what’s the keyword here? The key word is “cause.” So this is really a causal study and it doesn’t belong under Exploration—I will go into later the appropriate goal called Efficacy.

And the final example, “Do students with certain types of disabilities have shorter attention spans?” Would that fit here? And you would say, “Yes, that does fit here, because perhaps we can change students’ attention spans through some sort of teaching or executive functioning technique that can lengthen their attention spans and, therefore, learn more and be able to focus more.”

So that’s the Exploration goal.

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Let me move on to the second goal of Development and Innovation. This is where you're developing a new or modifying an existing intervention to improve student outcomes. Examples are instructional practices, curricula, professional development programs, principal practices or policies. Development projects have three components. There's the actual development, there's testing the feasibility of what you have developed, and then there's pilot testing it. And key to Development is an iterative development process because nothing works right the first time. So you really want to have a built-in system where you're developing, trying, developing, trying, with feedback loops built in, so to slowly be sure you've developed something that can work and had the intended outcomes.

Secondly, you need to define how it's operating as intended. So you have in mind a program that you're developing or instructional practice, but if you were to go in a classroom and observe somebody using it, how would you measure that they're using it in the way you intended it. And that will be important not only here, it will be important for the rest of this project, and it will be important down the road if you actually do an evaluation of the project, because you need to measure the fidelity and implementation of it.

When looking at the feasibility of implementation, you want to see can what you develop work in a real school or a classroom, and you don't need a large sample to do this. A small group of teachers or classrooms or schools, and then you want to be able to demonstrate that, indeed, it operates as intended. If it doesn't, then you need to go back to the development portion and revise it one more time.

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Finally, there's the pilot tests. This is where you collect some pilot data on the promise of the intervention to achieve intended outcomes. It doesn't have to be causal analysis. It can be, if you can build it into the requirements, but it doesn't have to be. It is much stronger, though, if a comparison group is involved. It can't use more than 30 percent of the grant budget because we really want people to focus on the development portion of this project. But it's important to do, because you want to obtain enough evidence that you can come back and say, "Here, we have an intervention we developed. We have a promise of that intervention, and now we want to come back for a new grant to actually evaluate it."

And I have a question here that says,

Question: *"Do I have to develop an intervention from scratch?"*

Answer: *The answer is no. You can modify an existing one. If there's already an intervention out there that's partly built, you can fully build it. If there's an intervention out there that's for a specific type children and you think, "oh, you know this could work with a totally different group", then you could propose to modify it for a new group. Or you could say, "You know, there's this really good program already out there but it's missing a component," you could come in for a grant and say, "I want to add a component to this intervention to strengthen it for this reason." So it doesn't*

have to be you starting on your own, it can also be improving what's already out there. And here you see that the Development grants have a maximum of 3 years and \$1.5M.

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Let's test your knowledge again. If I came to you, you're the program officer, and I said, "I want to develop a ninth grade biotechnology course. I'm going to do this quickly over the summer. I am going to implement it from September to December, and I am going to see if there are any gains. Do students learn a lot more in biotech from September to December? What would you advise me?" And I hope you'd turn around and say, "No, slow down." There's no iterative development process built in there. You're just saying you know how to build it and you know how it's going to work automatically. There's no testing of the feasibility. Will it really work in the classroom before you've gone in to try your pilot test? So you would want this to be stretched out more and include all the components.

If I said, "I'm going to give half the students in my school iPads and monitor how they're used and then look at test scores at the end of the year," you would say, "Well that's not really a detailed intervention. You're not really developing anything. It really doesn't fit under a development project."

What if I said: "I want to develop a new writing program. I have 10 writing teachers to work with. We're going to spend a whole year developing, trying it out in their classrooms, and revising it until we come up with a good writing intervention. Then the second year, I'm going to work with those teachers. They're going to implement what we created to show that it's feasible. And then in year three, they're going to implement it again, and we'll compare it to the scores of students writing scores of 10 other teachers who aren't using this intervention." If you're the program officer, you would say: "Wow, your development sounds like it fits. But the feasibility testing and the piloting are not quite right because you're still working with those same teachers who started with you at the start. They have an innate understanding of this intervention."

Feasibility really means if I have an intervention, I want to try it out in any school to see if it can be used somewhere. So I really would like you to take it and try it with some new teachers who have never seen it before, because that will be a much better test to see if it's feasible to use and scale up to a larger number of schools. If it doesn't work with 5 new teachers, we can't imagine it works with 500 new teachers. So we'd probably try to break off the developing teachers from the feasibility teachers, and then with the pilot test teachers we might come back and use a combination of them or even new teachers, again, to get a real test of the piloting. So that's the Development goal.

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Let's move over to the Efficacy and Replication goal. This is where you're doing the causal test of whether or not a fully developed intervention has a beneficial impact on student outcomes relative to some counterfactual, and you're doing this in an authentic education setting, classroom or a school. There are two types of interventions you may be looking at. One type includes interventions that are in wide use but have never been evaluated. The other consists of interventions that are not in wide use—for example, ones you've just developed under a Development and Innovation grant.

You're doing this research under ideal conditions. That's why we call it "efficacy." We want to see: does this work under the best conditions possible? So that allows you to limit your sample. It can be very homogeneous, so there aren't any other factors going on that may cause some noise in your results. And if you want to ensure high fidelity of implementation, you might provide extra assistance. You might be there in the classroom more often or you might be providing more support than would normally be expected or affordable just to see does this work under best conditions.

The second part of this title is replication, for example, let's say something works in a rural district, but we want to see whether it also works in an urban district. Or let's say this intervention worked well with A and B students, now we want to see does it work with C students as well. So you can take an intervention, try it with different populations and different places, trying to get more evidence on how this intervention works and why it works and where it works. Another idea, let's say you did an efficacy study with an intervention with a huge amount of support and extra assistance (you were in the classrooms every week) and you said, "Well, that turns out to be probably too expensive for a district to support. Let's try to do a replication study where we're only in there once a month because that's more reasonable, and let's see if we still get similar results." That example would fit under Replication as well.

I have a question that says,

Question: *"Should the schools be in the U.S., or can the interventions be tested in other schools abroad too?"*

Answer: *Let me address that in two ways. One is that all work has to apply to U.S. education. So if you can argue that schools outside the U.S. have results that are applicable to U.S. education, you can test schools outside the U.S. That's the bigger picture, and that's hard to argue in many countries where there are just so many other conditions. There may be a different language. The population may be just very homogeneous compared to the U.S. population. There may be very different ways of teaching. There may be very different values associated with education.*

But at the same time, there are certain schools where that is certainly possible. For example, if you wanted to work with military schools outside the U.S. that serve in the Armed Forces. And if you wanted to work with schools in American Territories, that's also acceptable. That's directly acceptable because those are considered part of the U.S. education system. But if you wanted to work in other countries' schools that are not under those conditions, you can make the argument, but it's going to be a hard argument to make. You should work with your program officer on how to make that argument.

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Let me come back now to Efficacy and Replication. You want to describe the intervention in detail so that peer reviewers know what you're actually evaluating. Your description should include theory of action, how it's supposed to work, what evidence is there that it works, and why it's practically important. Random assignment, experimental designs are considered the strongest, and they're preferred where possible. If an experiment can't be done, you can make the argument that it just can't be done in this situation. Then describe the strong quasi-experimental design and how it will work. This is especially true in special education where there are often not very many cases and single-subject or single-case designs are proposed.

It's important that you make sure your design is as strong as possible, and one way of helping to do that is look at the What Works Clearinghouse website and look at its criteria for evidence standards. They have evidence standards there for experiments, for regression discontinuity design; for single-case analyses; for one of the great threats of all three of these designs, attrition; and what you should include in your study to make it the strongest possible—which would make it the most likely to be accepted by the peer reviewers.

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In addition, when you're doing an Efficacy and Replication application, you want to show that you have a large enough sample size and that you have power to identify any impacts if they are there. You want to discuss fidelity of implementation, both in the treatment and in the comparison group. You should know what's going on in the comparison group and show that either they're doing something very similar or very different. That will help you interpret your findings.

You want to address any important moderators, and we'll talk more about these. You want to detail your analysis plan, and you want to avoid apparent conflicts of interest, and the Request for Application lists some areas of obvious conflict of interest. If somebody was a developer and is now involved in the evaluation, you want to keep them out of some aspects of the evaluation just to avoid that problem. You can see the typical awards have a maximum of 4 years and \$3.5 million.

So going back to the earlier question about international studies, there is a question that says,

Question: *“What about comparing American schools with schools in other countries?”*

Answer: *Again, if you can make the argument that that comparison can be beneficial to the U.S. education system, then, yes, you could do that. And, again, I'll say, there have been recent studies showing some higher-scoring science and math countries do things differently than the U.S. schools do, but is that the only reason? Are those the only reasons they do better in science and math? You have to be able to make that argument; that it's not other factors within the foreign country.*

Now another approach people have taken is to say, “Look, this foreign country is doing great in science. Here is something they do that we don’t do. I’m going to take that and try it in a U.S. school and see, does it work? If I apply this in the U.S. school, do I get better student outcomes?” And that fits easily in. For example, I’d take this approach to teaching fractions that is they use in Japan or Finland and I’ll try it out in my elementary school here in Kentucky, and I’ll do a random assignment where half my teachers in my district use it and the other half don’t, and then I’ll look at the student outcomes on fractions. That’s a very relevant study.

But to say, “Here’s what they do in the U.S., here’s what they do in Finland,” and try to learn from that, then you have to argue that it’s only the difference that I’m seeing, not something unobserved, such as the Finnish parents are doing something or there’s something else in the organization of the Finnish school that’s leading to these stronger outcomes. That’s a little harder to do. Here, again, you can work with your program officer on how to make that argument.

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Now we also have follow-up studies under the Efficacy goal, so that means if you or someone else did an evaluation and you want to follow it up, then we have funds for that. For example, let’s say we want to see how the students do as they go into future years. So if the students received a reading intervention in first and second grade and improved their reading outcomes, do they continue to show impacts in sixth grade, or do the impacts dissipate? Or the other type of follow-up study might ask, “Well, these teachers received training in this reading intervention for 3 years, and then the project ended, how do they do after the project ended? Was it sustainable? Are the teachers continuing to do what they did before, and are they continuing to get beneficial outcomes from their students?”

Now the studies you’re following up don’t have to be IES-supported studies. We have, for example, a grant following up a foundation-supported study at community colleges on keeping community college students in their freshman year from dropping out. We’re supporting a follow-up study that asks, “Well, okay, they didn’t drop out in their freshman year, but does that mean the students ended up graduating or not?” So while an initial study might be funded by a foundation or another government grant organization, we would still support a follow-up study if it could contribute to some knowledge to the understanding the intervention. And you can see these grants are a maximum of 3 years and \$1.2 million.

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Let’s check your knowledge again. If you’re the program officer and I asked, “Can I randomly assign iPads to treatment and control groups and see if the treatment group does better,” you would say, “No, you don’t have a detailed intervention here. There’s really no theory of action here on why this should improve things.” So then someone else might say to you, “I have an intervention. I’m going to provide 3 weeks of teacher training, ongoing coaching, and all the classroom materials they need.” And you would respond: “Okay. That’s about as ideal as you can get. So that would be allowable.” But at some point, you have to think when does it become unrealistic, because at some point the peer reviewers might say, “Where is the teacher going to get 3 weeks to go to teacher training,” or

“This sounds like something that’s going to end up costing \$5,000 per teacher. What district can do that?” So you could make your study ideal, but you want to think about where you might cross the line there.

Here’s another example. Someone comes to you and says, “I want to match 30 schools who have adopted an anti-bullying program to 30 schools who did not adopt it, and I’m going to match them on their percentage minorities, their percentage of free or reduced student lunch and their average test scores.” And here you would say, “Well, voluntary adoption is very dangerous because there’s probably unobserved reasons why the schools adopted it versus those who didn’t adopt it. You’re probably not catching that with the percentage minority and test scores.”

There may be some other approaches the researchers might be able to take, such as interrupted time series. They may be able to use propensity score matching if they can find other variables that might predict why some schools selected in or selected out. So this is a very weak kind of study, and we would probably say that the researchers need a stronger design for the peer reviewers to accept it.

Let’s assume four districts want to take part in a study; they are going to randomly assign a math curriculum; they were all interested in knowing if it worked better; and two of them were try it while two of them would use what they’re already using. Would this fit under Efficacy? Here we only really have a sample of four, so we don’t have power enough to do this study. As program officers, we would say, “Wouldn’t it be better if within the districts you could randomly assign a larger number of schools to take part in the study to get our power up?”

Somebody asked the question that thinks I’m beating up on iPads because they’ve asked,

Question: *“What if I had an ed tech intervention that included iPads?”*

Answer: *And I would say, “Yes.” For example, let’s say the intervention is for teachers to run formative assessments on their students on a regular basis using an iPad, and the student would read the paragraph and the teacher would grade it on their iPad, have the score, and it would tell them what the student was weak on so they could assign work to address what that student’s weaknesses was. This would be a perfect example of a study you could do. I was just trying to make sure that you understood it’s not just kind of a willy-nilly trying thing, that’s there really needs to be a theory of action going on and an actual intervention that could be transferred to other teachers in other schools.*

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Oh, right. So someone somebody asked,

Question: *“It’s two school districts, right, not two schools, what if they were big schools?”*

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Answer: It doesn't matter. Well, let me go back to that. If four very large school districts agreed that they'd take part and they would assign a curriculum to two of them, that would mean two districts had the math curriculum and two districts didn't. So your sample would be a sample size of four and your sample size would be too small to do an analysis.

Now if the four districts inside themselves assigned their elementary schools to take part or not to take part, so that you ended up with, let's say, 30 treatment schools and 30 control schools within the four districts, that would probably be a large enough sample that such an evaluation study could be done with high enough power. That's what I was meaning there. It's not how big, it's how many.

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Going now to the Scale-up Evaluation, our fourth goal, this is an independent causal test of whether or not a fully developed efficacious intervention has a beneficial impact on student outcomes. The keyword here is “independent.” The evaluation team has no financial interest in the intervention. That means the developer is not involved in the evaluation component. The developer can still be involved in implementation of the intervention, but they should not be at all involved with the evaluation.

“Efficacious”—that means we have evidence, strong evidence that the intervention works; we just don't have strong independent evidence. For example, maybe the developer did an Efficacy study and now we're going to do a Scale-up study to create an independent evaluation.

“Routine implementation”—that means the intervention is just implemented as if a school district adopted it. There's no extra help. There's no ideal conditions. It's just under normal conditions that we're doing this.

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So under Scale-up Evaluation there's only 25 percent of the grant award that can be allocated for the cost of the actual implementation of the intervention. Most of the money is supposed to go to the evaluation. Everything I talked about under the Efficacy and Replication goal applies here as well, such as power and design. Replication studies are also allowed, just as they were with Efficacy studies. So if you do a Scale-up Evaluation in an urban school district, you could then come back and say, “Well I'd like to try this in a rural school district.” Similarly, if you did the original Scale-up study with high school kids you can come back and do it with middle school students.

The typical award is 5 years, and you can see that there is a maximum of 5 years and \$5 million.

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There are also follow-up studies, so if you want to follow the students into their later grades, you can do that with a maximum of 3 years and \$1.5 million. And, again, it doesn't have to be an IES-funded initial study. Another organization could have funded a large scale Scale-up Evaluation, and you could apply to us for the follow-up study.

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Let's test your knowledge again. Imagine that somebody wanted to test a new in-service math teacher training program developed under a Development and Innovation grant in 60 randomly assigned classrooms. Does it fit under Scale-up? It doesn't because there's no Efficacy study done previously. There's no evidence that this teacher training program has an impact on students. A program officer would say, "No, you should apply to the Efficacy research goal. That's where it belongs."

If somebody says they want to compare two Algebra I curricula and the companies agree to provide the curricula at cost, along with teacher coaching, you might say, "Well, just tell me a little bit about it. If a district bought these curricula, would they get the teacher coaching? Is that a routine condition?" And the researcher might say, "Well, no, it really isn't. They usually just get a 4-hour introduction without coaching" then you'd say, "Well, then, that's not a Scale-up Evaluation. That fits under Efficacy because it provides ideal conditions."

On the other hand, if the person said, "Yes, normally every month we come out and coach the teachers in using it," then you'd say, "Fine. That's routine conditions." So this could fit under the Scale-up Evaluation, as long as it is the district doing the evaluation and not the companies that are doing the evaluation.

And as a final example, imagine that a charter management company has two small efficacy studies and a millionaire decides to give them a large grant so that they can take over 40 schools. Eighty schools apply and the company says, "Well, we'll randomly select them if we can get an IES fund to do an evaluation." What would you say to the charter management company? You'd say, "Well, not if you're doing the evaluation because that's not independent." However, if a third-party came along, and you came in on a grant together with the third-party doing the evaluation and you doing the implementation, that would fit under a Scale-up Evaluation study.

Slide 50

Okay. The last goal is Measurement, where you're developing and validating an assessment or other measurement tools. Normally, they're to be used by practitioners such as screening, formative assessment, progress monitoring, and outcome assessment. But you can develop measurement instruments for use by researchers. The big issue is that validation has to end up being with student measures.

Let's say you were submitting an Effective Teachers application and you have an idea how teachers should teach science. You want to see this kind of teaching going on in the classroom, so you have a measure of that type of teaching. And let's say you want to validate the measure against something. You can validate it against principle assessment, principal observations, or you can validate it against video observations or teacher logs. But you still have to then come back and validate it against student outcomes as well. Because if this type of teaching isn't linked to improving student outcomes, then IES wouldn't be very interested in supporting work on it because it's not leading to our final outcomes of interest, which in this case is improving student science outcomes.

There are also some very topic specific Measurement goals. For example, under Improving Education Systems there are cost accounting measures where you're trying to link how a district is spending its money to student outcomes.

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Several additional things about Measurement; first, the Measurement goal is not for projects that are evaluating an assessment that is used in an intervention. We often see tests or instruments that are used to help students learn. That's not the purpose of the Measurement goal. Second, the measure is the primary product, so purpose is not for you to create the measure as part of the larger study. To recap, a Measurement study is focused only on creating and validating the measurement tool. The typical awards are shown here, and you can see there is a maximum of 4 years and \$1.6 million.

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So, again, let's put on your program officer hat. Imagine somebody came to you and said, "I want to develop a formative chemistry assessment to help students learn how to balance formulas." Their argument is that by taking this assessment students learn, so this idea doesn't fit under Measurement. It's really an intervention to help students learn. You would then tell the applicant, "Well, you really should apply under Development and Innovation for this because you're developing an intervention."

What if somebody says they want to develop a measure of teacher instruction in fractions and validate it against teacher logs and principal observations? You would say, "Fine. But I also need you to validate it against student outcomes." In this case validating the measure against student achievement in fractions makes the study supportable under the Measurement goal.

What if someone comes to you and says, "I'm developing a measure of student attention, and I'm going to validate it against their grades, and it's part of my larger project to evaluate an intervention to increase student time on task." You would say, "The measure is fine and you're validating it fine, but the rest of this work is really not measurement work. You can do this work under a Development grant." On the other hand, let's say you were doing a Development proposal to increase student time-on-task; you could include in that a component to develop such a measure. But if you wanted to apply to us for a Measurement grant, you could only do the measure part.

Under Measurement, you couldn't develop the measure as part of an intervention to increase student time-on-task. That would mean you could actually have two different applications, one under Development and one under Measurement, or you could have one application under Development to do both of them together. But you couldn't have both of them under the Measurement goal.

So somebody's asking me . . .

Question: *“What’s the appropriate breakdown of total IES awards under each goal?”*

Answer: *So let’s see. Development awards are about 50 percent of our projects, Exploration awards run between 12 and 14 percent, and Measurement awards run between 12 and 14 percent. Then Efficacy and Scale-up awards together run about 25 percent, with most of that under Efficacy and Replication. The percentage of Scale-up grants is a very small number, 2 to 3 percent, just because they’re varied complex and involved projects, and it’s hard to put together the teams to do that.*

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The goals build on one another. An Exploration project can lead to the development or modification of an intervention. In this step, you're trying to identify what's a manipulable factor. This can lead to asking, “How could we develop something to address this manipulable factor?” Or an Exploration project may lead to an evaluation of an intervention because you may say, “This intervention seems to be highly associated with positive student outcome, let's do a serious evaluation of it.”

Development projects should lead to an Efficacy evaluation. For example, if I develop an intervention and I find it feasible and I get positive pilot data, my next step is to go do an Efficacy Evaluation. An Efficacy Evaluation should lead to a Scale-up Evaluation if an impact is found to see if under routine conditions we can find the same kind of outcomes. And Measurement projects can feed into all four of these goals. So if we're lacking a measurement instrument for any one of the goals, we may have to do the Measurement project first.

Now, of course, you can apply at any goal if you are in a stage ready to apply. You may have already developed something and you say, “Oh, I've developed this, I want to evaluate it.” Or you may say, “I have a measurement tool, I want to try it out in a study.” But overall, our hope is that researchers follow these steps until we end up with these Scale-up Evaluations and strong evidence that something works or doesn't work.

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So just take 5 seconds. Do you have a real clear idea where your research question would fit, under which goal? If you're not sure, look over the goals sections of the Request for Applications and talk with the program officer listed for your topic. A lot of times people come in with projects that straddle a couple of goals. They have development activities and they have an evaluation built into it,

or they want to do exploration and development, or even three of the goals. If this is the case, we would ask you to break it down to smaller pieces, then take your work and fit it into the first goal that needs to be done. After you complete that, come back and apply for a grant to do the next goal. Choosing the goal with the best fit, not going to the best funding, leads it to be more likely to be funded.

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Another way to think about the research goals is to think about the products that are expected to come out of the goals. So under Exploration you might identify a malleable factor that is or is not associated with student outcomes, and that would lead you to a Development project, or you might identify mediators and moderators of that relation. That would also support a future development product, or you might identify initial evidence of the association of a program or policy with student outcomes that could support an Efficacy Evaluation.

If you're doing a Development project, you're going to come out with an intervention ready to implement and evaluate. Let me just give you an example of some of these and make it clear. Let's say you were identifying a malleable factor associated with student outcomes for example. We have a project that's looking at the Massachusetts High School exit exam; for them, retaking the test is a malleable factor. Low-income students who failed the exit exam were less likely to retake the exam than higher income students. This might then lead you to an idea, "Well maybe the system should target low-income students who fail the high school exit exam and say, "look, you guys should retake this exam. You're more likely to graduate high school if you take the exam" and try to support low-income students in retaking the exam in order to reduce high school dropout.

Looking back at mediators and moderators of the relationship—we had a project that looked a mentoring program for K to second grade teachers, and they found from moderators that the type of mentors was very important. Specifically, what type of instructional practice the mentors were using and how comfortable they were with mentoring affected how well the mentoring program worked. Researchers also found some mediators. How much time was spent on mentoring, and how much of that time was focused on substantive issues led to a stronger relationship between mentoring and student outcome. So these findings would identify some areas where the district could say, "We're going to run this mentoring program, but we're going to be a little more careful who we choose to be mentors, and we're going to structure the mentoring time a little more carefully so that we have a stronger impact on student outcome."

For the third example, you can identify initial evidence of the association of a program or policy with student outcomes. We have an ongoing project now, looking at students who are in the International Baccalaureate [IB] Program and their college entry outcomes, and that's a secondary data analysis using some data from Florida. So if there are positive findings found there, that would then lead to, hopefully, someone doing a stronger causal analysis of the IB Program and student college outcomes.

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What are the expected results of Efficacy and Replication projects? We're hoping to get a methodologically sound evaluation of the intervention. For Scale-up Evaluations, we're hopefully getting a methodologically-sound independent evaluation of an intervention carried out under routine conditions.

I want to give a rather intertwined example of these two, actually going back to Development. We originally supported the development of two kindergarten math curricula under a joint grant program with the National Science Foundation. The principal investigators of those programs, they developed the math curricula. They actually combined parts of them and studied them under an Efficacy study and found that they had positive impacts on students. Now those are being studied separately under the Scale-up Evaluation goal. But, additionally, they've come back and they're testing them under another Efficacy study because they've added additional components to them as well. So this is a long chain of research and development looking at these math curricula. Finally, under Measurement, we'd like you to come out with a validated instrument ready for use.

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For all goals there are certain expectations of dissemination. We do expect you to publish in peer-reviewed journals, this is not only important for your own work, but it's important, if you come back for additional grants, peer reviewers will be looking to see whether you published your work in good journals. Can we trust that under a new grant you will do the same? At the same time, of course, we want you to get your findings out quickly. So working papers, presentations, posters, and seminars are good things to discuss. These are all good things to discuss in your application, how you're going to disseminate your work.

We want you to come out with products other people can use. You may develop software. You may develop manuals. You may develop procedures on how to implement the program you develop. You may come out with instruments and assessments. You may come out with long monographs because often journal articles are often not the best way to explain how to do something because they have to be written in a certain way and they're very page-limited. You may want to put out a monograph and post it on your website saying, "If you want to do this here's an in-depth explanation." And at the same time, you might want to offer to teach others to use your findings or products. We have people giving short courses. Some people actually are teaching the graduate students or undergraduate students how to use the materials, and others are putting up online tutorials on the matter.

We're starting to see more long-term collaborations with practitioners. So, for example, in some projects researchers are working with school districts or State education agencies. While they're using the data from the States or the districts, they're giving something back at the same time. A State may say, "Well we're happy to give you this data on where our high school students are going to college, but we'd really like to get a report back showing from each high school where the kids are

going so they can use it to discuss how things are going on in their school.” We’re starting to see a lot more of that. For example, we have a project in Tennessee looking at the State’s pre-K expansion. Tennessee funded a wide expansion of pre-k. Early results were positive, and the study is taking place during the same time the State is considering whether to continue the program or not. The project’s researchers are actually, in this case, collaborating with the policymakers, telling them what some of the strengths and weaknesses of the program are.

So somebody asked,

Question: *“Can you have more than one goal per research study?”*

Answer: *And the emphatic answer is “No.” You want to focus on one goal, accomplish that work, come back and apply to the next goal. So focus on developing an intervention then come back for a new grant to evaluate the intervention.*

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Alright. We’re moving through the agenda now. We’re leaving the two major grant programs. Everything I just said for the last long period of time focused on our two major grant programs. I’m now going to walk into the four sections of the research narrative. What I’ll be putting up here is specifically applicable to these two grant programs, Education Research Grants and Special Education Research Grants, and with some revisions, which I’ll mention, to the other grant programs as well.

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Let’s start with the research narrative. This is the key part of your application. This is what the reviewers pay the most attention to. It covers the substance of your proposed work. And it’s composed of these four parts—the significance section, your research plan, the personnel section, and your resources. Each of these sections will get a score by the peer review panel who will then give you an overall score. The overall score will be used in the decision to fund or to not fund.

The requirements for each of these sections vary by grant program and goal, so you’ll want to read those sections carefully in the Request for Applications. The research narrative is a 25-page-long section except in two of the other grant programs. We’ll talk more about the centers and the post-doctoral training programs later. But for most of the applications the narrative is 25 pages, single-spaced.

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Let’s discuss the significance section. Here’s where you describe your overall project. You lay out what are your research questions, what is the intervention if you’re developing an intervention or evaluating it, and what is your measure to be developed and/or validated. You want to have a strong rationale for this project. What is your theoretical justification? What is your empirical justification? What is your practical justification here?

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We want to warn you about some of the issues we see in applications. First, don't assume the reviewers think your issue is as important as you think it is. You have to really provide evidence of why it's a significant issue. Don't quote back the RFA on general issues, but do quote back if the RFA has highlighted a specific topic and your work is going to address that, because then that's another reason for significance. So, for example, in our Postsecondary and Adult Education grant topic, we highlight that there is a shortage of strategies to teach adult English language learners. If that's what you're interested in researching, you can say "and the RFA says this, so this is another reason why it's a significant issue to look at." So use the RFA in your favor, but don't just repeat it for the sake of common knowledge. The significance section will vary by each goal, so we're going to take a specific look at each goal.

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Under exploration you want to describe your malleable factors, and the moderators and mediators you're going to be examining, again, justifying their importance—arguing that this will lead to a useful next step. We should learn something about your malleable factor. Will it take us to a development project? Will it take us to an efficacy project? Make it clear that this is not just the end of the work. We're also asking for sort of a paragraph or two on overall importance. This is in response to the peer reviewers who just wanted to see all applicants summarize why they think their topic is important rather than for them to have to pick it out from different paragraphs.

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Under the Development goal, you're proposing to develop something new or modifying something, so you will need to argue that what is presently available is not good enough or that the new thing you're going to be making is much better than what's out there. So you will want to make the argument about why is this needed, what problem exists, what's out there now to address this problem, and why this new thing will be better.

Another issue is providing a good description of what you'll be developing, including all the components. Don't overdo it. Specifically, I mean, don't say "I'm going to develop a new science curriculum from kindergarten to eighth grade under one project", because people know you can't do that in 3 years. Make it realistic. Include a description of your theory of change, the theoretical support, your empirical support, and your practical importance. And so what this whole section does is answer the question of why this intervention will produce better student outcomes than the current practice and also provides the overall importance.

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For the Efficacy and Replication goal, make it clear what you're going to be evaluating. Explain what is the intervention; show it fully developed; show that implementation can take place; show that it's ready to be evaluated; and give justification for why we care about this intervention. In a sense it's almost the same arguments you'd make in a Development study—what problem is it addressing. If

the intervention is in wide use, show it's in use, but hasn't been evaluated. If it's not yet in wide use, show why the intervention might be important and that there is evidence that it can be used and that there's promise that it will have its impacts as expected.

Again, provide theoretical and empirical rationales; describe how does the intervention directly impact student outcomes or does it indirectly address them through mediators. Again, justify that the intervention can lead to better outcomes and discuss its overall importance.

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For Scale-up projects, again, you need a detailed description of the intervention. You need to justify why we need an independent evaluation under routine conditions. That's pretty obvious. You may say we have evidence that works under ideal conditions, but we don't know if it will work under routine conditions, and it hasn't been independently evaluated. Or you might say we have that evidence it works under routine conditions for one population or one geographic location, but we want to determine if it will work the same way in another population or location.

One slightly different issue here than under the Efficacy goal is that since the intervention is taking place under routine condition, it's important to show that high levels of implementation can be expected. The peer review panel will not want to fund an evaluation that ends up saying, "We found no impact," but it could have been because it didn't work or it could have been because nobody did it. So you want to show that people are willing and able to use this under routine conditions so that we get a good evaluation of it.

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And then for the Measurement goal, there are pretty much the same issues. Why is this assessment important? How will it be used? Why is it better than what's out there now? Is it filling a gap? What are all the other justifications behind it? Is it feasible to use so you're not asking teachers to spend an hour-and-a-half using a very complicated system to do the assessment? Is it something that could be used in the classroom?

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Looking over many of the applications, program officers have seen two key problem areas. One is that the intervention or the malleable factor is not well explained or well detailed. This happens sometimes because interventions can be very complicated, they may have many components. But it's important to be able to—in a short amount of space—give a clear description of what exactly the intervention is, because if a reviewer is confused about what is being done, they're not going to ever get un-confused and so they're not going to be happy with the proposal.

Other areas of "un-clarity" can include how you're going to get high implementation, or, why is this intervention strong enough to expect an impact. You often see concerns about information-providing interventions where researchers say, "We will give the teachers this information on their

students,” or “We will give the principal this information on their teachers.” And then the questions that come up for reviewers are “So what will lead the teacher or the principal to act on this information; do they know how to act on this information; and even if they know how to act on it, do you have any ways for them to act on it that will help them use it?” So it is important to try to show that not only is there a clear intervention, but also that it will be implemented and that we can expect the intervention to have an impact. These are three important things that often aren’t done in applications.

The fourth thing is that the description of the intervention is often focused on actions and not the content. The application will say “we’re going to get principals together with their mentors weekly for a 2-hour session.” Then the question is, “So what are the mentors going to do with those principals?” If the principals and mentors are just going to have a cup of coffee together, I wouldn’t expect it to have an impact. If the mentor is going to say to the principal, “I watched you last week, and here’s how I would work with a teacher who is having this difficulty with their students to improve their teaching,” you may expect to have some stronger impact.

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Another problem area we often see is a lack of a clear theory of change. How is what you’re looking at going to be related to all the way out to the student outcomes? What is the process by which a malleable factor links the student outcomes, or an intervention will improve the outcomes, or an assessment or an instrument can measure specific constructs? Laying out a clear theory of change makes clear what is expected to happen in what order and it makes it very easy for reviewers to understand the research plan. And a graphic can be very helpful here, something like a logic model, a very quick way to show your theory of change and make the whole structure obvious.

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I’m going to move on now to the research plan. This significance section describes what you’re going to do and why it’s important, but the research plan will show how you will actually do the work.

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The research plan describes the work you intend to do. How will you answer your research question? How will you develop your intervention or evaluate the intervention? How will you develop and validate your assessment? It’s very important that the research plan is aligned to the significance section.

The research questions are the way to link the significance to the research plan. Sometimes you see plans that seem to include work on something not described in the significance section. You want to give enough detail in every step in your plan so that the peer reviewers can evaluate it. If you skip steps, then peer reviewers have to trust that you know what you’re doing in that part. Also, you want

to show each step, so a timeline is often very useful to show what the steps are and when they will be done.

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Research plans, of course, differ by goal, but all of them should describe the setting, where is this work taking place and the population you're working with. If you're taking a sample, you should describe how that sample was taken. That's true for secondary data or primary data analysis, but it's also true for describing what schools you're developing an intervention in. You should address power issues and how you'll deal with attrition. These may be less important in a Development project, but still, if you're only working with one teacher or two teachers, you may get questions about it such as, "Is that enough people to really develop something; do they have a wide enough experience to do this; and how externally valid is the group you're working with?" If you're doing a Development grant with two schools, it's not going to be externally valid to all schools, but it may be to the type of schools you're working with.

You want to clearly describe your measures. They're the outcome measures, including those are that are close and far away. You also want to show that your outcome measures are actually answering your research questions. Again, we've seen applications come in where there's a research question, but the outcomes don't answer that research question. You want to describe the other measurement issues, for example, how you're measuring fidelity of implementation, operating as intended, and feasibility; and how you're getting feedback into a Development project. You want to discuss both quantitative and qualitative measures. You want to discuss the reliability and validity, and you want to discuss the relevance.

There's a trade-off between how sensitive a measure is and how broadly of interest it is. So, again, going back to the fractions example, where researchers are developing an intervention to help students learn fractions. If I was the researcher, I would want a very sensitive measure to see if the students I'm doing this intervention with learned something about fractions. That way I get to know that the intervention at least affects fractions. On the other hand, my principal or my school board might say "That's great, but is it improving their test scores? Is that enough to make a difference?" So one measure is very sensitive and very linked to the intervention, the other is probably much less sensitive, but is more policy or program relevant. You might want to include both to be able to answer both people.

Lastly, we have sometimes seen multiple comparisons issues. The more outcomes you're using, the more issues we have that some of them just may be due to chance. You need to adjust when you're using multiple outcomes, so you may want to be selective in the outcomes you use, but you also may want to address both sensitive and broadly interesting outcomes.

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All research plans need a research design, and I'll talk about this later in more detail because this is very goal-specific. And all research plans should have an analysis plan. For example, if you're going to get data, how are you going to analyze it? Are you going to analyze it in a way that answers your research questions? If you're using a statistical model, show the model you're using. If you're using multiple models, show all of them so that the panel knows that you understand all the models.

We often get clustering in education. We have students in classrooms and classrooms in schools, so it's important to address this in your analysis plan. You're going to have missing data, so by definition, you should describe how are you going to deal with missing data. This is a very important point.

If you're doing some kind of evaluation, you want to show at the beginning that the groups are—even in a pilot study—fairly equivalent at the start of the study. You're going to want to track attrition and show there's no bias due to attrition. Oftentimes you might find that in a control group there's higher attrition because they're not getting anything. For example, if you have a professional development program you're giving to teachers, the control teachers partway through might say "I'm not getting anything out of this study, I'm quitting. It's just not worth my time." In this case, you really wouldn't have a good comparison anymore.

You're going to make assumptions in your analysis, so you do want to do some sensitivity tests on those assumptions.

You're going to want to describe your qualitative data. Qualitative data is used very often in IES-funded research grants, especially in Efficacy studies and Development studies. The issue is it's often very under-described. People will say "I'm going to do a survey, I'm going to do a focus group," but then they don't go into detail. We want to know, "Who are they doing it with? How are they carrying it out? What are the questions they're asking? How are they going to get interrelated reliability? How are they going to code the data? How are they going to analyze the data?" It's very frustrating when you have a 25-page application and you only get three-quarters of a page or half a page on the qualitative data analysis.

It's also important to note that oftentimes we'll see qualitative data is just floating out there on its own because the quantitative data analysis is not linked to the qualitative data analysis. You want to be able to say: "How will I use this qualitative analysis to either interpret my quantitative findings or to actually incorporate it into my quantitative analysis as well?"

Okay. Let's move over, then, to the research design.

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You're going to start off with your research question, that way you're sure that your research design answers your research question. It's obvious in some cases that the design section has been written by a methodologist and not reviewed by a substantive person. For example, the design is a fine methodology, but it's not addressing what was written earlier on. Remember, if you're going to have different people write different sections, everyone has to read through the whole thing and make sure they're coherent.

What are some issues that are common to research design across the goals? Again, I'll mention attrition and missing data since they are so prevalent in education research. Another issue that comes up is access to and permission to collect and use data or just use data. For example, while it's great to propose you are going to collect personally identifiable data in 30 schools, you're going to have to get permission from the parents to collect data on their children. You would need to talk about how you're going to do that. Or you may say, "I'm going to use State data from a longitudinal data set." Again, that's excellent, but you need to show that either you have permission to collect that data or you're in the process of getting that permission.

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The research design descriptions, as I mentioned, will vary by goal. So looking at the Exploration goal, if you're doing primary data collection analysis, you want to talk about your sampling strategy. You want to talk about your data collection and your coding processes. Then if you are doing primary data analysis or secondary data analysis, you want to talk about some descriptive analyses to understand your data and some correlation analyses. You may want to attempt to address some selection issues, for example, using propensity score matching or maybe instrumental variables, and you may want to do some mediation analysis.

If you're submitting a Development grant application, you want to focus on the iterative development process. How are you going to set this up? So how are you going to take things and test them? How is feedback going to be carried out? And how many times do you think you'll test something and do feedback and redevelop it? Of course, that's an estimate, and it may turn out to be longer or shorter depending on how the process goes. Describe who is giving you the feedback, just spell out the whole process of development.

As for the feasibility study, who are you going to do it with? What is the authentic education development setting? How are you going to judge "operating as intended" to make the decision that this is feasible or not feasible? And then there is your pilot study comparison to a similar group. So, again, describe who's included in the study, how you will check equivalency at the beginning to see that the groups are the same, what measures are you going to use to look at outcomes, and then how you're going to analyze those outcomes.

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Now we are going over Efficacy and Replication studies. As I mentioned, randomized control trials are favored, and so you want to identify the unit of randomization and justify that unit, and what are your procedures for random assignment. Here, again, when you're doing random assignment, this is one of those areas where, if a developer was involved, you want to keep the developer separate from the random assignment. For example, somebody who's not linked to the intervention flips the coin or does the random number generation (or however you're going to randomly assign). If you are doing a strong quasi-experiment, justify why an experiment is not possible and discuss how this quasi-experimental design reduces your selection bias. There are going to be threats to internal validity and then, therefore, you should describe how this will moderate the conclusions you're going to draw from the study.

For all types of research designs, describe the control or the comparison group, and show that you have a large enough sample. You can either show a power analysis or calculate your minimum detectable effect size. Actually you should show this calculation and your assumptions behind it, and maybe give a little bit of wiggle room there. Some sensitivity in this case would be to change some of your assumptions so that the minimum detectable effect size is more like a confidence interval rather than a single point.

You will want to discuss how are you going to look at fidelity of implementation, both in the treatment and the control groups. Describe what is going on in the control group and how is it different than the treatment group. You may do some mediator and moderator analysis. And then there's always the issue of contamination if you're assigning by classroom versus school. There's a trade-off here; schools are very expensive if you're assigning by schools, so it's a lot cheaper to randomly assign by classroom, but then you have to justify, "Well, we wouldn't expect high contamination." And a lot of the research is now showing that teachers don't often pass on practices to one another within the school, so you may be okay with doing random assignment by classroom. And, again, this is because we understand how expensive randomizing or assigning by schools is.

You also want to describe how conditions are ideal here as well, so you might want to show how you're making sure implementation is high.

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For a Scale up application, it's the same as Efficacy and Replication, except routine conditions, an independent evaluator, and a cost analysis study (not a cost benefit study) that tries to understand the financial cost of the intervention.

For Measurement applications, your research design is your plan to develop and refine the assessment. You need to show that these constructs you're measuring actually exist and describe how teachers will interpret the assessment results. Describe how you will develop the items. Again, this is a bit like a Development study, because item development is often an iterative process and

you have to test for things such as bias. And then, describe how you will develop the procedures for administering and scoring. And, of course, you want to discuss in detail the reliability and validity studies you'll use with the instrument.

So somebody asked me about the research questions.

Question: *“Do you include research questions in both the significance section and research design in the research plan?”*

Answer: *Obviously that would depend. If you have a lot of research questions, that could take up a lot of space. So while you want to have your research questions in the significance section, you may also want to refer back to them in the research plan. For example, you may want to say this part of my research plan will address research question 1, 1a, and 2, or something like that. Or if you have room, you may want to spell out the entire research question.*

The point I'm trying to make is maybe write it the longer way first, where the research question is in all your sections and then pull it out so you make sure the research question is being addressed in all these different sections. That's the underlying point I'm trying to make.

Okay. So that's the end of the research section. Again, this was a very general overview and, again, I'm going to suggest you read the RFA on your topic and on your research goal, and then talk to the program officer in more detail to make sure you're addressing those specific issues under each of those.

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Now we'll move on now to the personnel and resources section. These are normally shorter sections than significance and research plan, but they're very important to showing that the work you're proposing to do can actually be carried out.

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We'd really suggest that you don't waste a lot of space in the personnel section describing every accomplishment of the key personnel. That's not the purpose here. All you want to do is say, “This person is doing this work on the project, and they have the expertise to do that work.” That's the link you're trying to make in the personnel section.

The other way to think about it is to think about what work am I proposing in this project. When I go to my personnel section, in every part of that work do I show that there's somebody with the expertise to do it? And so that means things like having a methodologist onboard who has the expertise in the method you're going to be using and having a substantive person onboard for every issue you're addressing (and that can actually be a number of things). For example, let's say I'm doing a project that's going to use technology to improve math instruction and math student outcomes. So I would need a person with expertise in math for the grade level I'm addressing. I would need a technology person, I probably need somebody who's a professional development

person who's worked with math teachers, and I may also need a math assessment person in order to do all this.

Now some of these people could be post-docs and some of these people might be advanced graduate students, but it's good to have that expertise in the project to show I've got everything covered. Never say, "I'm going to hire somebody with this expertise." The peer review panel will say, "No. I can't judge the quality of your personnel if you do that. I need somebody who has already said they're committed to join the project."

Also, another area of expertise is project management skill. If you're coming in for a large grant with lots of people and maybe multiple institutions, it's important to show you have somebody on the grant who's managed a project like that before. They don't need to have a Ph.D. They may be a project manager with a masters or something, but have been involved in project management to the point where they know how to keep many balls up in the air at the same time.

And, you also want to give the time contribution for each person. Again, the peer review panel might say, "Oh, look, somebody's on there for 2 percent of their time, you know, that's a phone call, do I take that seriously or not?" So key personnel should be on there with enough time for the amount of work that's being done. Now, again, it may be that a very senior person only needs to be on there for 5 percent of the time because you have some stronger younger people on the team and they just need somebody to occasionally check in with, that's fine. But, again, the time commitments should be relevant to the need.

You should orient the CVs that will be included as well. They're limited in size, they are only 4 pages. Then there's 1 page that's for showing other sources of support, which is a way to show that everyone has enough time to be on the project. So you really want people to write their CVs—to strip them out and show their expertise and the work they're doing in this project, that's the key part.

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Requirements: Peer review panels look at publication records, that's true, and they also want to see what are you proposing to publish from this grant. For Development projects, they look at what was developed in the past and also did you manage to get your—did you develop something and then get it out to be evaluated by you or somebody else, or are you just somebody who keeps developing things, writing them up, and moving on to the next intervention but your past work never seems to get out there. If you've had a previous IES grant (or if you have an ongoing one), you should discuss it. Describe whether it was successful, what you produced. As a peer reviewer, would your past history give me confidence that you will carry out this project well?

We mentioned before that if you're doing an evaluation, you should stress the objectivity in case the developer or someone with a financial interest is involved. And, as I mentioned in Efficacy projects, in the RFA it describes a number of steps that the developer can be involved in. While developers

might not be involved in the randomization of assignment, or might not be involved in the actual data analysis, they certainly can be involved in other aspects. But that's just a recommendation in Efficacy projects. For Scale-up projects, it's not a recommendation, it's a requirement. The evaluation has to be done independently, but the developer can provide routine implementation support.

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What are some personnel strategies if you're going to be the PI on a grant? If you're a senior researcher you want to show that you're going to be on the grant for adequate time. So if you're the PI and you say, "I'm going to be on for 5 percent or 10 percent," that's not going to be taken seriously. I can't give you a number, but obviously you should be on for enough time that people feel that you will have strong oversight and you're not turning everything over to a young research or to a post-doctoral to really run the project. You should make your credentials clear because the review panels, as I'll mention later, cover a very broad spectrum. Everybody on the panel reviewing your application might not be in your specific field, so even though you may be well-known in your field, in other areas you may not be as well-known. I'm not saying boast or brag; I'm just saying you should present your work in this area.

If you're a junior researcher and you want to come in as a PI or a project director, you should show that you have adequate expertise in this area, not only to do the work, but, again, to manage the project. For a lot of the exploration projects, it makes perfect sense for junior researchers to come in as PI. They're doing secondary data analysis; typically they did that work in their Ph.D. program or as a post-doc. If it's not a very complicated project with them, then maybe having a couple of additional grad students doing data analysis with an existing data set would be perfect. On the other hand, if you're a brand new researcher and you're coming in and proposing a \$3 million project working in 40 schools with three other institutions, people are going to be skeptical unless you did something like that before.

Even if you're a junior researcher and have done work in the area, the peer review panel is made of senior researchers and they are often more comfortable if a junior researcher has some senior people on the project that they could then, if needed, turn to for advice. So, for example, you might add senior researchers as a co-PI or as a consultant, or you might be able to put several of them on as an advisory panel. The point would be that they're on the project for enough time that the peer review panel says, "Oh, there's somebody there you can always turn to if something doesn't work out the way you originally thought it would."

So somebody asked,

Question: *"Can you give examples of collaborators? Could that be local sites that serve children, or are you talking about the research level, another institution, or a university program?"*

Answer: Both are important. For the research, you may be working with another university or a research institution, and that's where you can get collaborators from. Or you may be working in a school with a school district collaborating with you. When I get to the resources section, I'll talk about them as well. But I guess I was focusing more here on research collaborators, which might be located at universities, research institutions, or districts as well.

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Okay. Let's jump over to resources. This section is really to show that the prime institution and the other institutions that are taking part have the capacity to support the work. Some universities have boiler plate language, "Our library is this big, it has this many books, we have this computer system . . ." That's fine, but don't stop there. Remember, you're doing a specific type of work, so you want the resource section to show that you and your institution can support that type of work.

The other key thing is to show that everybody involved knows what they're supposed to do and agrees to it. So every group, every institution, including the schools or the districts, need to show that they agree to do this research, agree to their responsibility, agree to take part. And it's not a bad idea, in the case of schools and districts, to maybe have an alternative backup, for example in case you propose to do something and while your application is under review the superintendent changes and the new superintendent says, "I'm not interested in this study, we're not going to do it." In this type of situation, it's not a bad idea to be able to come back and say, "Well if district A isn't interested, district B is interested," in case something happens in district A.

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We have a special appendix—Appendix C, where you put all your letters and support from other research institutions, from contractors, etc. If you're working with a State, if you're working with a district, or if you're working with a school, it's important to put your letters there. Appendix C is also a place where you put letters saying you have access to use data. So if you say, "I'm using a State data system or a district's data," the State or the district should write a letter saying, "Yes, you are, you can use it for this purpose."

We know that some States or districts won't write that letter until you get the grant, so what we're asking for in that case is to have a letter from the State or the district that says "We understand so and so is applying for this grant. This is the type of work we would support if they get the grant. We will then seriously consider their request for our data." That's enough to get things started. But if you come in with no letter, then the review panel says, "Well what's the chance they're going to get the data?" If they don't get the data, they can't do the project." They'll probably score your resource section even lower.

For most national data you can obtain, especially from IES, you can get a license very easily online. In your research narrative you should at least discuss that you have accessed such data before and you know how to get it. The other issues dealing with data are showing that you're familiar with the data, that it can do this type of work, and that if you're merging datasets, that the merging can actually be done.

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I'm going to jump out of the research narrative for a bit just to talk about some of the other sections. The research narrative is limited to 25 pages, but there are some other sections that support the research narrative, and I just want to note them. There's Appendix A with a 15-page limit. Here you can put in any figures, charts, and tables, or examples of any measures you'll be using. Don't put text here because text will be cut out. But you can put things into tables and figures that could be written as text or tables and then refer to them in the main body of your narrative.

For resubmissions, the other very important thing you can include here is a discussion of changes. First, you can decide that it's a new submission or it's a resubmission. If it's a resubmission, take 3 pages in Appendix A and discuss how you address the past reviewer comments. That's very important to do, and take the comments seriously, and respond pleasantly, and note how you've responded in the text. Oftentimes, one of the past reviewers will be a present reviewer, and they'll be very interested in seeing how you responded to the panel last time as will the rest of the panel.

If you decide, though, that you've changed the proposal so much you want it to be considered to be a new proposal, then take up to 3 pages in Appendix A and make that argument. Say, "I've totally revised this, I've changed my whole research question, here's why I don't think you should consider it a resubmission, the old past review is really not relevant anymore and here's why." Otherwise what will happen is that your application will get forwarded to the review panel with the past review comments and they'll say, "Oh, they didn't address any of the past review comments," and they'll score it lower for that reason.

For Appendix B, there is a 10-page limit and here is where you can put examples in. If you're doing an evaluation or if you're developing an intervention or evaluating an intervention or developing an assessment, you can show parts of that, that is show parts of what the intervention is doing or what the assessment will include.

And Appendix C, as I mentioned before, is where you include those letters of agreement from the districts, schools, other partners, or consultants. It's very important not to use a boiler plate here. If an application comes in with identical letters from 20 schools saying things like "We think this is a useful project and we will support it," that's very weak, versus letters that are more specific.

For example, "We understand this project will be in our school for 2 years, we understand they'll collect data 6 times, and we understand that they will provide us with iPads for our math teachers." The letter should include what the rights and responsibilities are under the project so that the panel

knows, “Oh, the school knows what it’s supposed to do and what it’s going to get out of this study, and they agree to it.” This will make the reviewers much more confident that the schools are going to take part.

So I have a question,

Question: *“Can individuals apply or only institutions?”*

Answer: *We give grants to institutions, but somebody applies as the project director. So the grant will go to your institution with you as the project PI, or “PD” as we sometimes call it, and you’ll be the one responsible for implementing the grant. But, for example, if you move to another institution, your institution has to agree to allow your grant to move with you.*

Someone asked,

Question: *“Should we include prior support for projects that are not funded through IES or if they are related?”*

Answer: *If you think that shows that makes you a stronger person for this grant, that you’ve had experience in project management or you’ve done work in this field before or you’ve carried out this type of design, yes, you should note that.*

Question: *“Is senior and junior designation determined by rank or experience in publication?”*

Answer: *And I would say both. Obviously if you’re young, but you have some major publications, and you have some major grants, the peer review panel is going to consider you as more capable and more reliable than if not.*

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And then there’s the budget and budget narrative. You want to provide a clear budget and a budget narrative for the overall project. And if you’re handing any sub-awards out to a district, or out to another university, you’ll need separate budget and budget narratives for them. This is all explained in the Submission Guide: the budget categories and how to describe them. And, again, I ask you to check the RFA for any specific budget requirements. Remember I mentioned that for a Development pilot study you can only use 30 percent of your budget, or for a Scale-up project only 25 percent of the budget can go for implementation.

And you want to ensure agreement among the research narrative, the budget, and the budget narrative. This is important because you may propose to do something in the research narrative and then it doesn’t show up in the budget. For example, you say, “I’m going to do a survey,” but the budget doesn’t have anything for the survey, and people get very confused at that point.

Somebody asked me,

Question: *“Is there a cap on indirect costs?”*

Answer: *Indirect costs are negotiated between your institution and the Federal Government. It doesn't have to be with IES or the U.S. Department of Education, it can be with any Federal Agency, and we recognize that indirect cost rate. So if you had negotiated an indirect cost rate with the Navy, that indirect cost rate will apply to us. And I'll mention later on the totals I mentioned before are for direct and indirect costs together. We don't fund you and then the indirect cost is extra. It's part of the full grant.*

Somebody asked,

Question: *“Is there an annual maximum amount, or is it possible to request the maximum amount to be distributed over a few years?”*

Answer: *No, it's not possible to request the maximum amount over a few years. You can divide the maximum amount by the fraction of years you have, to get the maximum for that number of years.*

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Okay. So now let me spend a little time on the other IES grant programs.

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These do not use the same topic goal structure we just spent a lot of time on. They use a similar research narrative. So, for example, the post-doctoral application requires a fellowship plan instead of a research plan and the narrative has a 15-page limit. Center applications are longer. They have a 35-page limit, and they have a fifth component, which is called “Plans for Other Center Activities.” But the other two grant programs I mentioned before, Statistics and Methods and State and Local, they use the exact same research narrative that we discussed. The other thing is all these other grant programs have only one application deadline.

Slide 87

So let's go to the post-doctoral training grants first. These are grants to institutions, they're not to individual post-doctoral fellows. They're grants to institutions and the person at the institution who will train a group of post-doctoral researchers in skills to conduct a type of research that we fund. Your institution must grant doctoral degrees in fields relevant to education.

You can request up to 5 years, but 8 fellow years are the maximum supported. For example, you could have two fellows for 3 years and one fellow for 2 years as a maximum, or you could have fewer. You could have one fellow for 2 years if that's what you wanted to do. And the maximum award amount is \$687,000.

The funding is to be used for recruiting fellows, giving them a stipend and benefits, their travel, and some other supportive costs. There are no funds in here for faculty research or faculty salaries or facilities.

You can apply for a post-doctoral training grant that could be on general methods or very specific to a field. For example, Northwestern has a post-doctoral training grant that is really focused on randomized control trials and meta-analyses in education because that's what the PI's interest is. Florida State University, they have a very strong reading program. Their focus of their post-doctoral training grant is on improving methods used in the field of reading and research. So you can design it in a way that fits the type of work you're doing.

Slide 88

The Statistical and Research Methodology in Education competition is trying to expand and improve the tools available for mainstream education researchers. The people applying for that are usually advanced statisticians and methodologists, but we're pushing them to design tools that can be used by the mainstream researchers. You can see that the maximum is 3 years and \$1 million. And this is only funded one time. It's a September deadline. Some examples of ongoing work are development of software to impute missing data in multi-level models; developing or evaluating value-added models; and developing and improving single case methodology.

Slide 89

The Evaluation of State and Local Education Programs and Policies. This competition is for circumstances when States are doing something or districts are implementing something new, but they don't have the money to evaluate it. State and Local will provide a grant to evaluate it. Either the State or the district can apply for the grant directly. If they don't have the design and analysis capacity, they can link with a research institution, or a university, or a private institution to submit an application to do an evaluation. The typical range you can see here—the maximum is 5 years, \$5 million. Applications are only accepted at the September deadline.

So let me give you an example, I mentioned, I think, before that Tennessee expanded its pre-school program. Vanderbilt University has linked with the State to do an evaluation. They expanded the program, but it's still over-subscribed, so the pre-schools have to use lottery. So they are able to do a randomized control trial looking at the kids who won the lottery and got into pre-school and those who didn't. Their research team is also doing several other studies, but the core in question is what are the outcomes for those students who got in versus those who didn't.

In some cases we've had some projects done using secondary analyses. I mentioned to you the research on the Massachusetts High School exit exam which is using a regression discontinuity design based on students' scores on the exit exam, comparing students who just passed versus students who just failed. This ongoing work is being done in collaboration between a researcher at Harvard and a Massachusetts State agency.

Slide 90

We also have a set of Research and Development Centers. Centers address key complex issues. Their main purpose is to have a focused program of research, a tightly linked set of studies that focus on the key issues. They use the majority of their funds to this end, but they also can do supplemental studies and leadership activities. These Centers are set up as cooperative agreements, which means we're a little bit more involved in what type of work they do for up to 5 years, with a maximum of \$10 million. Center applications are accepted in September only.

Slide 91

Just as a note, we've often seen with Center applications that it's really just the applicant's own research agenda versus a national issue. Or somebody gets a bunch of folks together and everybody says, "This is my research issue so stick me in there into your Center," leading to a set of very poorly linked studies rather focusing on one issue. I would argue if you think you have either one of these examples, then you should just apply individually to one of the other programs I mentioned, primarily the Education Research Grant Program or Special Education Research Program.

A third problem is that applicants submit a set of linked studies in their application, but not one of them has enough detail for the reviewers to evaluate it. So if your team is proposing to do eight studies, take one study and detail it and then say the other studies will follow a similar process. That gives the reviewers a chance to evaluate the quality of the work.

Slide 92

What centers are we competing this year? We have two Education Research and Development Centers. The first is on cognition and adult literacy, so it's looking at the underlying cognitive processes that support or impede adult learning in reading, writing, and numeracy. What you'll do is that preliminary exploration work and then you'll develop and pilot an invention for adult learners looking at a specific population, adult basic education, adult secondary education, and/or adult English language learners.

We also have a center on State and local policy. This is a very wide-open center. It's just to evaluate specific State or district education policies relevant to improving education outcomes, anywhere from pre-K to grade 12, and it's supposed to be done in collaboration with States and districts. We have two of these centers now that are coming to a close. One was our Center on the Analysis of Longitudinal Data in Education Research. What they did was a lot of secondary data analysis in States that have good data such as Florida, North Carolina, and Texas. And the other was the National Center on Performance Incentives, which ran a large-scale experiment on teacher performance incentives to determine whether they have any impact on student outcomes.

Slide 93

For special education we have four centers being competed this year. The first two are to develop and modify interventions for families to support the behavioral transition and academic needs of children in K to 12 and then to test the efficacy of those interventions developed. The first center is on children with autism, and the second center is children with emotional and behavioral disorders. The third center will develop or modify and test the efficacy of a school-based intervention, addressing multiple outcomes, academic, behavioral, cognitive, for students with autism. And the fourth center will explore the underlying factors related to literacy for students in K to 2 or who are deaf or hard-of-hearing and to develop innovative approaches to improving reading instruction for these students.

Slide 94

This is a really busy slide, but this is sort of your reference slide for the application deadlines. So this is just an easy way for you to refer back.

Slide 95

So I'm going to end up now with just a couple of slides looking at the submission and review process.

Slide 96

Submission. First, your institution has to be registered on Grants.gov to apply. If you're from a research institution or a university that's probably been done already. If you're located at a community college or a not-for-profit or an NGO, your institution may not have done that yet, and so you'll need to go onto Grants.gov and register. It's a bureaucratic process and I would suggest, if you're interested, that it's worth starting soon because it can take some time. Once you are registered, you'll complete all your online application forms and upload your PDFs.

The IES Grants.gov Submission Guide can help you do this. Your authorized representative, if you're at a university or a research institution, has to complete the process.

We stress that the application deadline is 4:30 p.m., and zero seconds, Eastern Standard Time (Washington, DC time) on the date of the deadline. If your application comes in after that it's labeled late. Because we have to treat everyone the same, anything that comes in late will not go to review. And to be honest, it's a lot safer to submit earlier in the week. You can imagine that the server gets very crowded on the date of the deadline. It can be very slow, and it can actually lead you to being late. So, again, we stress if you could apply early its best.

If you have any problems applying, Grants.gov does have a helpline, and when you talk to them, they will assign you a case number. It's important to keep that case number, because if something goes wrong with the server and it's the server's fault, you can then ask us for an extension or to say please accept a late application because it was the server's fault. If it turns out to be your fault, it's

considered late and it won't be reviewed. But the case number allows us to track back to process what happened.

After you submit you should get four emails. Grants.gov will say, "We got your application" and will give you a tracking number that starts with the word "grant." Then Grants.gov will send you another email saying "We've validated your application" or "We reject it because it has errors." If there are errors, then you need to figure out the errors, use the helpline, use the message, and then resubmit until it is validated correctly. This is another reason why you may want to apply early, in case there is an error that you'll have time to resubmit. The third email message will indicate that the U. S. Department of Education has confirmed retrieval of the application from Grants.gov. Finally, you'll get an email from the U.S. Department of Education—as long as Grants.gov has validated your application—that says you have a grant number starting with the R305 or R324 number, and then that's the number you use in contact with the program officers.

Slide 97

What happens when your application gets to the Department of Education? First it goes through a compliance screening. You'll note in the RFA there are certain format requirements. I mentioned there's a 25-page limit for many of the research narratives. They ask you to use a certain font size, and so it will screen out for those. We saw that the appendices had certain page limits.

Then your application will go through responsiveness screening, which asks "Did you apply to the right program? Did you apply to the right topic and goal?" And then if you did, you'll be assigned to a review panel.

Two or three reviewers will do the initial review of your application, and one will be a substantive expert and one will be a methodologist. If they score your application high enough, it then goes to the full panel. So in a sense, you're writing for both specialists—the initial reviewers, and then more generalists. This is because the review panel is made up of people with general expertise in different fields. So you have to kind of write for both groups. At the same time there's going to be an expert on the panel in every procedure you use. So, if you say you're doing a survey, somebody on the panel will be a survey expert. If you're proposing a meta-analysis, somebody there will be a meta-analysis expert. So you have to have enough detail on every issue you're covering to convince those experts that you know what you're doing.

For the review, you will get an overall score plus individual scores on each of the four sections. So far we've been in a position to fund all grants that have been rated with an overall score of "Outstanding" and "Excellent." Reviewers are rating on an absolute scale and they're not comparing applications to one another. That means in some cases we don't spend all our money if there aren't enough applications rated "Outstanding" and "Excellent." For example, in the center competitions, we may not fund a center if none of the center applications are scored as "Outstanding" or "Excellent."

We encourage resubmissions. There is no limit on the number of times you can resubmit. And it seems currently, slightly, maybe 50-60 percent of the grants we award are resubmissions. You should definitely consider resubmitting if you don't get funded the first time or even the second time.

Slides 98-99

If you'd like more information on the peer review process, here's the website where it's located.

Slide 100

You will receive email notification of the status of your application. That would be at the earliest funding date that I mentioned. So if you apply in June, you'll receive an email, at the latest, by March 1st. If you apply in September, you will receive an email, at the latest, by July 1st. You may receive it sooner, but that's the formal date.

Oh, so, somebody asked me,

Question: *"What is the scoring range? Is high or low better?"*

Answer: *The scores on each section are scored on a one-to-seven scale, with seven being the best. But the overall score is based on a one-to-five scale, with one being the highest. The reason for that is we don't want reviewers just to take an average of their scores, so we force them to rethink the overall application and the quality of the application.*

Slide 101

You'll get the reviewer comments on your grant if you are or if you're not funded, and, again, we say, please resubmit. If you want to know more about the process, we're holding two webinars on how to actually walk through and do the application. As you can see, the first one on May 2nd is full. If that's the only—and the one on May 23rd is still open, so you can register for that. If you can't make the May 23rd, you can send us an email asking if you can be put on a waiting list, and if it opens, we can invite you to take part.

Slide 102

And finally, if you have any questions now, feel free to send them, but if not, if something comes to you a little later, please email me that. And otherwise, I appreciate your attendance and have a good day.

So there is a question out there. Somebody asked,

Question: *"Is it possible to see the scoring rubric?"*

Answer: *Well you go to the peer review section I put up there on the slide to see how scoring is done.*

And somebody asked me,

Question: *“Is there more information on the Center on Interventions for Families of Students with Emotional and Behavioral Disorders?”*

Slide 99

Answer: *And I would suggest, then, that you go to the Request for Applications for the Special Education centers, which would be under 84.324C on the website that was listed earlier on where the RFAs are kept.*

Somebody asked,

Question: *“Is there a financial viability review for the submitter?”*

Answer: *I’m not exactly sure what that means. I would say that organizations like universities and research institutions have tracking records, so they probably wouldn’t need this. If you’re something like a small not-for-profit or non-government organization, there may be follow-up questions on your ability to manage the project, yes, if indeed it receives a high score from the peer review panel.*

Okay. It looks like that was the last question, so thank you again. And please do contact us if you have further questions.