Budget

For a project that serves teachers and K-12 students, are there guideline amounts for stipends to pre-service and in-service teachers?
There are no specific guidelines but participants such as teachers and others should be compensated at a level that is customary for their locality/region. It is the responsibility of the proposer to have knowledge of, or research, what are customary stipends and compensation levels.

Are funds for school-based technology permitted, particularly the purchase of hardware or even the rental of devices for student events and teacher training?
General use equipment is not supported. Technologies used for multiple purposes in a typical classroom (e.g., laptops) are **not** things that ITEST funds should be used for. We do approve of the use of small amounts of funds for projects that require specialized software, applications, and specific materials that are not typically available in schools and are not general use materials within schools and other educational programs.

Can we purchase laptops for students who will be using them to do data collection in multiple locations? Note the students will not keep the laptops past the summer.
This is not an allowable expense. NSF does not typically the support of laptops for all participants. Such items are considered capital expenditures which the program is usually expected to provide outside of NSF funds.

Dissemination

Are there recommended conferences and journals for presentation of and publication of results?
No. Your dissemination plans should indicate the particular constituency groups that will be interested in your findings. In some cases there may be greater interest in practitioners, teachers, and school administrators in what you find and given the nature of your project. In some cases it may be specialists in the STEM field who would be interested given the nature of your project. So part of the task in the dissemination plan is for you to identify the groups, probably more than one, that would have particular interest in what you are studying and learning. Then you should develop a strategy for reaching those particular groups. So the conferences and journals that are relevant are going to be related to who those groups are - their journals, their conferences, and their communications networks. You should also think beyond conferences and journals - about social media, websites, and professional networks. Think about how the particular groups that you have identified communicate with each other in terms of spreading good ideas.

Partners

Is there a percentage of the grant that should be allocated to an outside researcher?
There are no particular guidelines in terms of what percentage of a grant should be allocated to any particular group participating in the project. It depends on what that person or that group is tasked with doing and what their contribution to the overall project will be. Project funds should be distributed accordingly.

Should the outside researcher be listed as a Co-PI?
It is up to the PI and/or the team that is submitting the proposal to choose appropriate roles for project leadership. One way to approach the decision is to think of it in terms of the nature of the person's role. For individuals involved in the management of the project, a Co-PI role may be appropriate. If an individual is bringing specific expertise to the project, but not involved in managing the project, a Co-PI role may not be appropriate.

Is there any requirement for business and industry match or contribution?
No, and this is prohibited. No cost sharing is allowed in submitted NSF budgets. The funds that NSF awards for a particular project should be sufficient to run the project as described. Cost-sharing contributions are specifically prohibited in the proposal. If what you are wanting to be funded is part of a larger activity, only include in your proposal the part of this larger activity that you want NSF to fund and limit your description to that, because that has to stand alone.
That does not mean that you cannot use outside resources in support of your project.

Do partner letters have to state a value on their contribution or participation?
Absolutely not and this should be avoided. Letters of commitment should focus very specifically on how committed an organization is to performing their role as described in the project description. There should not be a monetary value placed on that. It is a matter of the organization understanding what their role is and articulating their agreement and commitment to performing their work as outlined in the proposal.

If a non-profit organization partners with a university (that will be the lead institution) to submit a proposal, must the non-profit have an approved 501(3)c status?
There are no restrictions on who can submit or participate in an ITEST proposal, but a tax-exempt, non-profit organization must have the appropriate documentation of its tax-exempt status finalized and documented before any federal support can be authorized.

Process

When will notifications be issued regarding Feb 11 submissions?
We are required to respond to 70% of proposals within 6 months. Given the volume of proposals we expect to receive, it is unlikely that notifications will be issued before August 2014.

How many teachers and students should be included in a Strategies proposal?
That is highly variable and depends on the nature of the project. There should be sufficient numbers of participants to provide the evidence needed to decide whether the project can be successful in reaching its goals.

How early does IRB approval need to be obtained - prior to submission or prior to receipt of funds?
IRB approval is required before an award can be made. A proposal can be submitted without IRB documentation but you should be ready to submit your IRB application and related materials to your organization IRB office quickly if NSF indicates there is a possibility your project will be funded, based on reviews. NSF will require proof of the approval or exemption before the award is made.

What percentage of proposals is funded in each cycle?
The overall percentage of education proposals funded by NSF is around 10% but varies slightly with different programs.

What percentage of proposals funded are new submissions versus re-submitted proposals?
We do not make any distinction between proposals that have been re-submitted versus new submissions. All proposals go through exactly the same process. No priority is given to proposals that are new proposals or have been reviewed before.

Proposal Content

Are projects required to include technology activities, or is a focus on STEM workforce development sufficient for a proposed project?
There is no specific requirement for a particular kind of involvement with technology. The aim of the ITEST program is to increase STEM workforce capacity. We tend to focus on projects that generate an awareness of career opportunities that motivate students to pursue appropriate educational pathways of STEM related careers. Since the STEM workforce involves a lot of technology we do look for projects that have technology-rich experiences that develop skills related to the STEM workforce. Other than that, the only specific requirements are that all projects have to involve students, the focus has to be on workforce development, and if it is a Strategies project it has to address one of the 6 questions listed in the solicitation.

Would the ITEST program be appropriate for a project focused on an all-female target audience, specifically designed to increase middle and high-school aged girls' interest in engineering education and careers?

Yes. The ITEST program places a high priority on finding strategies that increase the involvement of underrepresented groups in STEM careers.

Are interdisciplinary project welcomed? If so, what category would the project be in?

Yes, interdisciplinary projects are encouraged. They are welcome in both the Strategies and SPrEaD categories.

Can an ITEST project focus on K-5 school children STEM education? If not, which of the NSF programs would be most appropriate for this population of students?

Yes, we are particularly interested in projects that focus on younger students. We know that interest in STEM careers begins very early in young students and we are particularly interested in projects that address the challenge of attracting students to STEM early on. There are other programs at NSF that focus on K-12 generally, but specifically on the elementary grades. For example, the DRK-12 program is specifically about developing resources, models, and tools for students of all ages. Also, the new program STEM-C, the replacement for the former MSP program, focuses on partnerships between universities and schools and other agencies.

What about early learners: pre-K and preschool?

Yes, preK-12 is definitely of interest. But you would have to make a strong case that the activities are in fact career related, or would generate an interest in pursuing STEM activities.

For SPrEaD submissions, does the prior research have to have been funded through NSF, or can applicants use prior research data of their own?

No, the research does not have to be previously funded by ITEST or be from a previous Strategies project. There must be evidence that the strategy has been tried in some setting and pre-existing evidence that the strategy has potential and is ready to be tested on a broader level.

Can you provide a few examples of what NSF deemed as 'innovative' projects from last year?

We cannot speak to particular strengths of previous projects as that is considered confidential information. However, you can find out what has been funded by visiting the NSF ITEST website or the former ITEST LRC website.

Also, there are ITEST projects highlighted on the NSF website that have demonstrated merit in some regard and are being highlighted for their innovation. Click here to view them.

The ITEST solicitation asks that Strategies proposals address at least one of the questions listed in the solicitation. What section of the proposal should address these questions?
There is no specific section where you are required to include this. One possible location would be in the section that describes the proposed project's goals and objects. You may also want to indicate how the research questions or the research plan that you have relates to one or more of the questions in the ITEST solicitation.

Can you differentiate between Strategies and SPrEaD proposals?
Strategies proposals are untested strategies that have the potential to be effective because they are based on previous findings from the literature, but for which there is currently no existing evidence of effectiveness. SPrEaD projects involve the broader application and further testing in other contexts of strategies that have **already shown to be effective in limited scale** or in a very specific setting. That is, there is already evidence that the strategy works in some situations and/or in some contexts and a SPrEaD proposal based on the strategy will identify what are critical features of the strategy, what are its limitations, and what are the factors that contribute to the success of the strategy.

Can you describe some specific pitfalls to avoid in proposals?
Two categories or common mistakes are below:

Mistakes that will lead to a proposal not being reviewed at all
- Not attending to all the formatting rules, e.g., font size, page length.
- Failure to address the two required evaluation criteria of intellectual merit and broader impacts. Those specifically have to be addressed in both the project summary and project description.
- Including unauthorized documents or data in the appendix.
- Neglecting to include a post-doc mentoring plan if you have post-docs involved.
- Neglecting to include a data management plan.

Characteristics that often diminish the rating of a proposal
- Too locally focused. Local issues are important, but the ITEST program is an investment in strategies that should benefit the entire country. Proposed projects should be framed as being nationally important and connecting to a broader set of communities.
- Assertions made without citations to the literature.
- Vague language about how the project will be implemented and what is actually going to be done.
- Inadequate attention to research design.
- Generalizations about the data that is going to be collected and how it is going to be analyzed.
- Skills and expertise that will be needed for the project not being evident in the personnel associated with the project.
- Not adequately addressing BOTH of the review criteria - intellectual merit and broader impacts.

What are some of the key differences between the current and the past ITEST solicitations?

- The Scale-up strand has been replaced by the SPrEaD strand.
- The current solicitation is much more focused on looking for those kinds of factors that are important to the success of a project at a larger scale but not necessarily a large-scale scale-up as was implied by the previous strand.
- The research strand has been eliminated but <u>every</u> proposal is now expected to have a research component.
- There are also some revised requirements for project evaluation, see section 5 of the solicitation where it describes what is required for each of the elements in the project description.

Would a Strategies proposal be appropriate for those who have educational materials developed, are developing and evaluating implementation strategies, and do not yet have the efficacy and effectiveness data sufficient for a SPrEaD proposal (i.e., Design and Development Research Type #3 projects described in the Common Guidelines)?

Yes, it would be appropriate as long as the focus is on workforce development and involves schools. The emphasis has to be on the strategy and not on materials development. That said, testing materials that have been developed within the context of a Strategies proposal is acceptable.

Would a suite of technologies that increase the number of teachers (in a particular subject area, e.g., Physics) being trained per year, be an appropriate submission for ITEST?

No, that would not be sufficient. All projects must also provide direct experiences for students. Students must be directly served in ITEST projects, professional development for teachers is not sufficient.

Would a project that provides remote training of STEM subjects to students in underserved areas be appropriate for ITEST?

Remote activities for students could potentially be part of an ITEST project. But note while that the program is particularly interested in projects that address the needs of underrepresented groups, it is not enough just to be located in a particular region. In terms of broader impacts the proposal must specify exactly how you are responding to the particular needs of the underrepresented/underserved groups your project intends to target.

Can you provide additional guidance on how best to integrate career exploration content and activities into a proposed project?

The program wants projects to promote career awareness and the pursuit of career pathways in STEM and STEM cognate fields. There may be several ways to do this, for example including career counselors/specialists in the project, making explicit that the activities being engaged in are related to specific kinds of careers, and employing strategies for engaging students in that exploration. ITEST projects can also provide direct experience either in an industrial setting, science lab setting, or comparable STEM environment to give project participants exposure to people engaged in STEM careers and the activities they engage in for their work.

For interdisciplinary projects, do we need to identify a "primary" STEM core domain and/or other STEM cognate domain?

No, it is not necessary, but you should discuss clearly and specifically what STEM content will be involved. Proposals that are very specific about what particular STEM field and activities they are focused on tend to fair better than general proposals.

Could a program that involves teachers, grad students, and perhaps post-docs as trainees be able to count them as program participants?

Yes, teachers can be a target audience/participant in an ITEST project although all ITEST projects must serve students.

To what extent are informal learning settings of interest to ITEST?

Many informal organizations such as science museums, for example, have received ITEST grant awards in the past and the program is very interested in ITEST projects that occur in informal learning environments. In addition, many ITEST projects, maybe the majority, either have an informal component or a mixture of formal and informal activities. The involvement of informal activities is highly encouraged, though it is not a requirement. There does appear to be a trend with more proposals including a mixture of formal and informal activities.

My proposal is focused on developing team-based activities for students to work with scientist mentors to explore a STEM curriculum as a way to make them aware of the range of careers involved. How specific do we need to be about these activities - they are a new element (the curriculum, technology, and mentor network exist).

You should outline the STEM content and provide specific examples of what the activities might be. It is useful for reviewers to understand what the student experience will be, even if the activities are not fully developed yet (which you can make clear in the proposal). You would essentially be describing your "concept," which would be developed and formatively evaluated in the project.

Research & Evaluation

What is required of a rigorous evaluation?

The evaluation should have appropriate rigor for the project design and use validated evaluation resources when possible. The intent of the program is to have a very tailored and structured evaluation for all projects. By rigorous we mean having very specific questions that guide the evaluation and very specific ways of collecting data needed to answer those questions. The evaluation should be data driven as opposed to a general narrative about what happened that characterizes things in a very general way. We want very specific evaluation questions, supporting data, and evidence for any assertions that are made.

Can you please delineate of the role of an external evaluator versus an evaluative advisory board. If a proposal includes both, are the combined costs to be in the standard 10% cost range?
We do not provide guidelines about what percentage of a proposal's budget should be devoted to evaluation. Both program officers and reviewers try to make an appraisal of the reasonableness of the cost depending on what is being proposed. It is important to make sure that the cost is reasonable given the extent of the proposed evaluation activities.

There are two aspects to the evaluation component. One relates to accountability aspect and is summative in nature – i.e., did a project do what it proposed to do and what was the outcome of the work? The summative evaluation is typically done by an external evaluator. The other part of the evaluation is the continuous improvement piece or formative piece. That is, as the project is being implemented an evaluation professional or team is giving feedback to the project team in terms of what is working, what changes ought to be considered, and how processes can be improved as the project moves on. Formative evaluation work can often be performed by an advisory team, which typically includes individuals who have a range of specializations and who can guide the project as it unfolds. It is important to keep in mind those two different functions of evaluation and understand that the functions can be performed by two different entities, if you so choose.

Is there a standard for the STELAR "monitoring requests to further data collection and analyses, build models and disseminate findings" that should be incorporated into a proposal's data management plan? [Response from STELAR staff]
There is no specific standard. The resource center, at EDC, has been collecting project monitoring information from ITEST projects for four years and will continue. Please review the reports from the Management Information System to see the questions asked. The questions that the program is interested in have to do with what it is that projects do, who participates in those projects, and what the impacts are on the participants. If the evaluation and the research that you are doing is sufficiently rigorous you will be able to answer the questions asked in the Management Information System. In addition, STELAR is very interested in supporting the dissemination work of funded projects.

Can you provide additional clarity on what it means to untangle the "research" and "evaluation" functions?
In terms of research, your project, along with implementing an activity/testing a strategy is trying to answer one or more research questions in order to add to the knowledge base of how to attract students to STEM and motivate them to pursue and persist in STEM education pathways and careers. Evaluation is about the performance of a project - is the project is moving toward its goals, generating the data needed to answer the research questions, and having the intended impacts?

Can you discuss broadly the role of research in the ITEST Program and anticipated outcomes of research?

The ITEST Program is an effort to increase the STEM workforce capacity in the country, and is interested in studying ways of drawing people into the STEM workforce and helping them pursue the appropriate educational pathways to STEM careers. This is important at all educational levels, not just programs that result in 4-year degrees or graduate school study but also technical degrees requiring technical college or community college, 2-year degrees, and other related programs that build the STEM workforce. The program is, in essence, driven by the 6 questions listed in the Strategies section of the solicitation which define the spectrum of knowledge we are trying to build through the funded projects.