Cyberlearning and Future Learning Technologies
Prospective PI Webinar

May 2015
About NSF and what we fund
National Science Foundation’s Mission

“To promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense...”
The US National Science Foundation

- US government agency, funded by tax dollars
- Funds, but doesn’t do, scientific research
- Reports to the National Science Board, 24 scientists appointed by the President and confirmed by the Senate
Organization of NSF

- NSF funds research and development in all fields of science, math, engineering, and technology*
- NSF is organized into Directorates (like colleges in a university) and Divisions (like departments)
- If you are interested in education the types of proposals we take depend on where you send them
Education and technology at NSF

• **Education and Human Resources**
  – Research, development, and implementation supporting STEM education in the US at all ages (including research on broadening participation in STEM, learning and learning environments, and STEM workforce)

• **Social, Behavioral & Economic Sciences**
  – Research in social science (psych, neuro, anthro, etc.) which may include learning research

• **Computer & Information Sciences & Engineering**
  – Research on developing and studying new technologies, including learning technologies, *plus* some programs related to educating computer scientists

• **Other directorates**
  – May have projects on using technologies in education in their respective disciplines
Mission:
To enable excellence in U.S. STEM education at all levels and in all settings in order to support the development of a diverse and well-prepared workforce of scientists, technicians, engineers, mathematicians, and educators.

★ This is for demonstration. Not all programs are listed.
Mission:
To enable **excellence in U.S. STEM education** at all levels and in all settings in order to support the development of a **diverse and well-prepared workforce** of scientists, technicians, engineers, mathematicians, and educators.
Contrasting cyberlearning at NSF with other agencies

- NSF’s mission does not include clinical health research or education, although it can include basic research relevant to health (try NIH).
- NSF’s mission does not give us primary responsibility for educational implementation in the US (this is primarily a state responsibility, or US Department of Education).
- We support commercialization of research in some of our programs, but we are not a venture capital fund, and we definitely don’t support commercial ventures with no relation to research.
How NSF evaluates proposals

• Submissions are made to specific calls (program announcements, program solicitations) or via our general Grants Proposal Guide
• Proposals that follow the submission guidelines are peer reviewed according to National Science Board Criteria*
• We fund a small portion (typically 5-15% in Cyberlearning)
Important rules for newcomers

• Read the *Grants Proposal Guide* and follow it
• Your proposal has to come through an eligible institution (typically a university or non-profit)
• Don’t send in the same proposal multiple times
• Ask questions if you have them
• Consider resubmission with changes from feedback from earlier proposals, but note that all submissions are reviewed from scratch
NSF National Science Board review criteria

• Intellectual merit: What will we learn? How will it advance science?
• Broader impacts: What will the immediate or eventual impact be on society? How will it make the world a better place?

Educationally focused projects often have a hard time disentangling these, but you need to separate them out in your proposal.
Elements of the NSB criteria

The following elements should be considered in the review for both criteria:
1. What is the potential for the proposed activity to make a difference?
   a. By advancing knowledge and understanding within its own field or across different fields (Intellectual Merit); and
   b. By benefiting society or advancing desired societal outcomes (Broader Impacts).

2. To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?

3. Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?

4. How well qualified is the individual, team, or institution to conduct the proposed activities?

5. Are there adequate resources available to the PI (either at the home institution or through collaborations) to carry out the proposed activities?
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   a. By **advancing knowledge** and understanding within its own field or across different fields (Intellectual Merit); and
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2. To what extent do the proposed activities suggest and explore **creative**, **original**, or **potentially transformative** concepts?

3. Is the **plan** for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a **mechanism to assess success**?

4. How **well qualified** is the individual, team, or institution to conduct the proposed activities?

5. Are there **adequate resources** available to the PI (either at the home institution or through collaborations) to carry out the proposed activities?
The submitter’s three jobs

• Identify the right funding opportunity
• Conceptualize a fantastic project
• Write a persuasive proposal in 15 pages
Actually ~100 pages

- Cover sheet ‘signed’ by AOR
- Summary and Narrative (1+15p)
- References cited
- Biosketches (2p ea.)
- Budget(s) (1p per year + 1) and Budget Narrative(s) (3p max)
- Current and Pending Support
- Facilities and Resources
- Data Management Plan (2p)
- Postdoc Mentoring Plan (1p)
- Other Supplemental Documents **ONLY** as allowed
Finding funding opportunities

• Prior awards
• Drill down through our organization
• Look at individual solicitations
• Bring ideas to a program officer
Finding Funding Opportunities on the NSF Website: www.nsf.gov
Innovative Technology Experiences for Students and Teachers (ITEST)

STEM Learning and Research Center

The STEM Learning and Research (STELAR) Center builds capacity and magnifies the results of ITEST projects to deepen the impact of the ITEST program. To learn more about STELAR, the ITEST program, and current and past ITEST projects, please visit http://stelar.edc.org/.

CONTACTS

<table>
<thead>
<tr>
<th>Name</th>
<th>Email</th>
<th>Phone</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>Julia V. Clark</td>
<td><a href="mailto:jclark@nsf.gov">jclark@nsf.gov</a></td>
<td>(703) 292-5119</td>
<td></td>
</tr>
<tr>
<td>Edith Gummer</td>
<td><a href="mailto:egummer@nsf.gov">egummer@nsf.gov</a></td>
<td>(703) 292-5110</td>
<td></td>
</tr>
<tr>
<td>David L. Haury</td>
<td><a href="mailto:dhaury@nsf.gov">dhaury@nsf.gov</a></td>
<td>(703) 292-8614</td>
<td></td>
</tr>
<tr>
<td>Andres Henriquez</td>
<td><a href="mailto:ahenrique@nsf.gov">ahenrique@nsf.gov</a></td>
<td>(703) 292-5092</td>
<td></td>
</tr>
<tr>
<td>Christopher Hoadley</td>
<td><a href="mailto:choadley@nsf.gov">choadley@nsf.gov</a></td>
<td>(703) 292-7906</td>
<td></td>
</tr>
<tr>
<td>Julie I. Johnson</td>
<td><a href="mailto:jjohnson@nsf.gov">jjohnson@nsf.gov</a></td>
<td>(703) 292-8624</td>
<td></td>
</tr>
<tr>
<td>Julio E. Lopez-Ferrao</td>
<td><a href="mailto:jlopezfe@nsf.gov">jlopezfe@nsf.gov</a></td>
<td>(703) 292-5183</td>
<td></td>
</tr>
<tr>
<td>Celestine H. Pea</td>
<td><a href="mailto:cpea@nsf.gov">cpea@nsf.gov</a></td>
<td>(703) 292-5186</td>
<td></td>
</tr>
<tr>
<td>Robert Russell</td>
<td><a href="mailto:rirussell@nsf.gov">rirussell@nsf.gov</a></td>
<td>(703) 292-2995</td>
<td></td>
</tr>
<tr>
<td>Gerhard L. Salinger</td>
<td><a href="mailto:gsalinge@nsf.gov">gsalinge@nsf.gov</a></td>
<td>(703) 292-5116</td>
<td></td>
</tr>
<tr>
<td>Finbarr (Barry) Sloane</td>
<td><a href="mailto:fsloane@nsf.gov">fsloane@nsf.gov</a></td>
<td>(703) 292-8465</td>
<td></td>
</tr>
<tr>
<td>Elizabeth VanderPlas</td>
<td><a href="mailto:evanderplas@nsf.gov">evanderplas@nsf.gov</a></td>
<td>(703) 292-5147</td>
<td></td>
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DUE DATES

Full Proposal Deadline Date: February 11, 2014
Full Proposal Deadline Date: November 6, 2014
Some important notes

• Solicitations come and go. Some are multi-year, some are not but recur anyhow, many change names
• Solicitations will always have a minimum of 90 days to submit but may not have more
• Most solicitations follow the fiscal year, due in late fall or spring
• Just because NSF has funded a certain kind of work in the past doesn’t mean we have money for it in the future
Conceptualize a fantastic project

• Avoid a focus on topics, ensure a focus on activities that people want to see occur
• Any part of the project that you can do before the funding arrives, you should do before submitting the proposal (locate partners, design studies, do preliminary design work, submit IRB, etc.)
• You will necessarily have thought through more detail than you may be able to express
• Your project must contribute to the knowledge base; typically mere evaluation is not enough
• You **MUST** align with the solicitation if you are submitting to one
Conceptualizing your project: Common issues

• **Fit with program**
  Must match program goals

• **Clarity and specificity**
  Should have important decisions made, plans laid out

• **Research and development**
  Methods must match questions, build on literature, and contribute to knowledge

• **Expertise and collaboration**
  You need to incorporate expertise appropriate to the contributions you want to make, both in project and in proposal

• **Innovation and impact**
  You should be addressing an important problem, and not reinventing the wheel
Write a persuasive proposal

• By the end of page 1, the reviewer needs to know what you will do (roughly)
• The activities alone are not persuasive; you need an argument for why those activities lead to desired outcomes in both intellectual merit and broader impacts
• Ensure the expertise of your team is adequate to do the work and their expertise is reflected in your proposal
• Build trust in the reviewers that what you can’t fit in the page limit is within your grasp
• You MUST follow the rules of the solicitation if you are submitting to one, and the GPG in any case
Write a persuasive proposal: Help the reviewers

• Make what they are looking for easy to find, using the language of the review criteria and headings to highlight the elements of the project description

• Don’t assume that all reviewers will know the jargon of your discourse community or commonly used acronyms

• Consider how your proposal will read both when reading start to finish and when a reviewer skims to look for certain elements
Write a persuasive proposal: Common problems

• Ignoring requirements stated in the solicitation or the Grant Proposal Guide
• The “Trust Me” approach: provide citations or evidence for critical assertions made, and detailed plans that can be evaluated
• The oversell of yourself or your project; take a neutral tone and let the evidence speak
• Pages of general, vague, or rambling narrative without precision and details
• Overemphasis of rationale for the project at the expense of methodology and details of what will actually be done
Before You Begin Writing

• Do your homework
  – Familiarize yourself with the NSF website
  – Print and read the Grant Proposal Guide (GPG)
  – Read the solicitation carefully multiple times
  – Check the NSF Awards Search Page
  – Visit the Website of the resource center or network for the relevant program.
  – Read sample proposals; ask funded PIs politely

• Talk to NSF Program Officers about your ideas
  – POs may ask you to send a 1-2 page summary in advance.
Contacting program officers

• Generally better to email rather than call
• Face-to-face or phone meetings are just as good, no need to travel to DC
• Don’t mass email—multiple POs may work on a program, talking to many creates redundant work
• Be prepared to say what you’re asking for: advice on where to submit an idea, feedback on a one-pager to a program, procedural advice or answers to specific questions
• Consider the Policy office for legal/policy
• Recognize that program officers are busy
• Consider volunteering to review (send a CV right near a program deadline)
Possible Timeline

• 12-6 months ahead: identify opportunities from prior years, read award abstracts and outcome reports
• 6 months ahead: send 1 pager to program officer (optional) and begin discussing with any partners
• 3 months ahead: read final solicitation carefully. Alert sponsored projects office
• 1.5 months ahead: share draft proposal for feedback with colleagues. First draft of budgets.
• 2 weeks ahead: upload everything except narrative, if possible; ensure subcontract paperwork done
• 1 week ahead: final edits by PI, partners, and sponsored projects; mop up any last supporting docs
• Day before due date: submit if possible