Elements of the EHR Core Proposal

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Mission of the Program

The EHR Core Research (ECR) program of fundamental research in STEM education provides funding in critical research areas that are essential, broad and enduring. EHR seeks proposals that will help synthesize, build and/or expand research foundations in the following focal areas: **STEM learning, STEM learning environments, STEM workforce development, and broadening participation in STEM.**
Mission of the Program

The ECR program is distinguished by its emphasis on the accumulation of robust evidence to inform efforts to (a) understand, (b) build theory to explain, and (c) suggest interventions (and innovations) to address persistent challenges in STEM interest, education, learning, and participation. The program supports advances in fundamental research on STEM learning and education by fostering efforts to develop foundational knowledge in STEM learning and learning contexts, both formal and informal, from childhood through adulthood, for all groups, and from the earliest developmental stages of life through participation in the workforce, resulting in increased public understanding of science and engineering.
Overall Outcome of the Program

The mission of EHR is to achieve excellence in U.S. science, technology, engineering and mathematics (STEM) education at all levels and in all settings (both formal and informal) in order to support the development of a diverse and well-prepared workforce of scientists, technicians, engineers, mathematicians and educators and a well-informed citizenry that have access to the ideas and tools of science and engineering. The purpose of these activities is to enhance the quality of life of all citizens and the health, prosperity, welfare and security of the nation.
Research Strands of EHR

STEM Learning and Learning Environments
  fundamental research on learning in STEM
  research on STEM learning environments

STEM Professional Workforce Development
  research on STEM professional workforce development

Broadening Participation in STEM
  Research in Disabilities Education
  Research on Gender in Science and Engineering
Proposal Types, Amounts and Duration

Level I (14) - up to $500,000 and up to 3 years
Level II (24) - up to $1,500,000 and up to 3 years
Level III (6) - up to $2,500,000 and up to 5 years
Synthesis Projects (10) - $300,000 and up to 2 years
Conference and Workshops (10) - Typically between $25,000 to $100,000
Elements of ECR Proposals

High quality ECR proposals should address these six EHR solicitation elements

Reviewers will look at these when reviewing, address early and often
Linkage to theory and extant research in the field

All research proposals should be located in a body of literature to which a contribution would be made. The proposal should make the case for why the proposed line of inquiry is fundamental in nature. The PI’s should include a discussion of the theory or theories grounding the research and how the proposed research will add to this theoretical grounding. The program will allow descriptive studies of phenomena that could lead to the development of a theory or model or that contribute to theory.
Research Plan

Proposals should include well-focused research questions and/or testable hypotheses that reflect the current state of knowledge in the area and the theory or conceptual framework being used. The proposal should discuss in detail the methods used to answer the research questions and/or test the hypotheses posed, along with the types of data to be collected and methods for data collection. Methods should directly link to the theory or theories being used. If a population sample is used, this should be described along with the rationale for sample selection, and the investigator's access to the sample. The proposal should address whether the design is premised on special needs and interests due to educational level, gender, race, ethnicity, economic status, or disability, and to what extent data will be disaggregated for multiple characteristics.
Contribution to implementation (where applicable)

Proposals to conduct fundamental research should highlight implications for subsequent enactments of the intervention paying particular attention to subjects, measures, application of the treatment and settings.
Contribution to foundation knowledge and theory

Proposals should include a coherent and persuasive chain of reasoning that shows how the research claims will be warranted and how the results have the potential to add new evidence based insights to theory, and where appropriate practice.
Communication Strategy

Proposals should include a strategy for reaching a broad audience for the findings of the project including, where appropriate, researchers in education and other fields, practitioners, and public audiences. The potential results of the proposed research are expected to be of sufficient significance to merit peer-review and broader publication.

Think about more than just journals, think IMPACT

Don’t add social media just because it sounds good

Two good resources in solicitation
Objective External Feedback

Proposals should include a strategy for ongoing objective external feedback using benchmarks, indicators, logic models, roadmaps or other evaluative methods to document progress toward goals, objectives and outcomes defined in the proposal. All projects are expected to track and report their accomplishment of proposal targets for broader impacts and intellectual merit. This objective external feedback can be provided through a number of vehicles: the advisory board, or through a formal evaluation. A plan for such soliciting objective external feedback should be documented in the proposal.

Hint: think budget & workload
Broader Impacts

Broader Impacts: The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes.

NSF projects, in the aggregate, should contribute more broadly to achieving societal goals. These "Broader Impacts" may be accomplished through the research itself, through activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to, the project. The project activities may be based on previously established and/or innovative methods and approaches, but in either case must be well justified.
Intellectual Merit

Intellectual Merit: The Intellectual Merit criterion encompasses the potential to advance knowledge; and

All NSF projects should be of the highest quality and have the potential to advance, if not transform, the frontiers of knowledge.
Elements to Consider for BI and IM

1. What is the potential for the proposed activity to:
   a. Advance the knowledge and understanding within its own field or across different fields (Intellectual Merit); and
   b. Benefit society or advance desired societal outcomes (Broader Impacts)

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

3. Is the overall plan 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 organization to conduct the proposed activities?*
Data Management Plan Overview

Investigators are expected to promptly prepare and submit for publication, with authorship that accurately reflects the contributions of those involved, all significant findings from work conducted under NSF grants. (AAG)

Reviewers actually look at this!

Can make or break ties in review panels since it looked at last

No more than two pages

See GPG for further details
Data Management Plan Contents

the types of data, samples, physical collections, software, curriculum materials, and other materials to be produced in the course of the project;

the standards to be used for data and metadata format and content (where existing standards are absent or deemed inadequate, this should be documented along with any proposed solutions or remedies);

policies for access and sharing including provisions for appropriate protection of privacy, confidentiality, security, intellectual property, or other rights or requirements;

policies and provisions for re-use, re-distribution, and the production of derivatives; and plans for archiving data, samples, and other research products, and for preservation of access to them.
Be Aware of Recent Changes

Results from Prior NSF Support

Biographical Sketch(es)

Special Information and Supplementary Documentation

[Link](#) to the summary webpage
EHR Final Thoughts

- View funded award abstracts from this program
- Consider cross institution or cross departmental collaborations
- Remember this is **core research** not a project
- Add a TOC or Logic Model if possible
- Emphasize personnel’s qualifications & adequate resources
- Get the best team possible (strong + diverse)
- Does your institution have a high teaching load? How will the PI’s handle the work if your school has a high teaching load?
Other general tips...

Let the scope of work you proposed to do + what you have done already dictate the level of award

Sell your proposal in the first few pages

Add a TOC or Logic Model if possible

Learn your institution's routing policies, process and timeline

Learn the “Gloster Shuffle”

Do those “other docs” early

Reach out to collaborators for support letters early