Demystifying NSF RITEL Research Proposals: A User-Friendly Rubric with DEI Emphasis

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Introduction

Drafting a grant proposal for submission to the National Science Foundation (NSF) is a complex undertaking that requires careful consideration of multiple areas and attention to detail to improve the chances of being funded. While novice researchers may undertake the writing of the proposal with guidance and mentorship from NSF RITEL program directors, they may not have access to the received wisdom of more experienced researchers to improve their documents. Various institutions have generated publications directed at researchers intending submissions to the NSF and shared guidelines as well as useful suggestions on the grant writing process. While useful, the narrative format utilized does not lend itself to easy consultation as a self-assessment tool. Finally, the topics of Diversity, Inclusion, and Equity are not addressed in detail.

Methods

Phase 1: A rubric was generated that included required NSF guidelines for *key components* of the Research on Innovative Technologies for Enhanced Learning (RITEL) Program Solicitation document (NSF 23-624). In addition, for each key component, a list of suggestions and best practices was generated through group discussion, consultation with secondary sources, and interviews with experienced grant writers. The first draft of this rubric is shared during this meeting.

Phase 2: The RITEL Self-Evaluation Rubric will be shared with a larger pool of experienced researchers to seek their feedback on the recommendations included for selected key components. Submitted comments will be evaluated by the team to yield a user-friendly, structured rubric that will serve as a tool with two main goals: first, to prompt grant writers to address the most critical NSF guidelines and second, to consider other recommendations and best practices that may improve their proposal document.

Results

The rubric included useful recommendations and reminders to experienced and novice grant writers alike. It was found to be unique in the addition of a section on Diversity, Equity, and Inclusion (DEI) which encouraged researchers to reflect on their rationale for including diverse, underrepresented groups and protected classes as study populations, strategies for their recruitment, and potential for generalization of results.

Conclusion

Additional use of the rubric to evaluate anonymized manuscripts to compare the results to the actual funding decisions would improve the usefulness and validity of the instrument.

Summary RITEL Heuristics

Idea/Intellectual Merit Adheres to NSF guidelines:
Early stage & exploratory research that advances technology & advances education/learning.

Collaboration between Teaching/ Learning and Technology Areas Adheres to NSF guidelines:
Artificial intelligence (AI), Robotics, Immersive or augmenting technologies, diverse learner/ educator populations, contexts, and content, including teaching and learning in (STEM) and in foundational areas that enable STEM (e.g., self-regulation, literacy, communication, collaboration, creativity, & socio-emotional skills.

Broader Impacts Adhere to NSF guidelines:
Proposal states benefits to society or how project will advance desired societal outcomes through creative, original, or potentially transformative concepts. Plan is well-reasoned and well-organized.

Project Summary Page Adheres to NSF guidelines
The summary includes a "self-contained description of the activity that would result if the proposal were funded." Clearly states the why or motivation behind the project. Provides a summary of the Broader Impact.

Proposal Adheres to NSF guidelines (per PAPPG):
Project Summary, Project Description (Intellectual Merit and Broader Impacts), References, Budget and Budget Justification, Facilities, Equipment and Other Resources, Senior Personnel Documents.

PI and Collaborators in the Research Team Adheres to NSF guidelines:
The proposal reflects the qualifications of the team. Teams should include individuals from multiple disciplines with strong backgrounds in education/learning and technology.

Dissemination of Results Adheres to NSF guidelines:
Proposal details how the results will be disseminated broadly and how PII will be protected.

Timeline Adheres to NSF's guidelines: Proposed timeline appears reasonable to complete project activities.

Facilities, Equipment and Other Resources Adheres to NSF guidelines:
Description of organizational resources available at the PI home institution and/or collaborator institutions.

Diversity, Equity, and Inclusion Elements Align with NSF RITEL's Stated DEI Priorities
Serve diverse learner/educator populations,developing new educational technologies that are cost-effective for budget-limited school districts, colleges and universities. Collaborate with diverse cross-disciplinary teams.

Planned approaches to Measuring Outcomes
Clear standards for measuring success. Outcomes are clearly stated and measurable. The plan incorporates a mechanism to assess success considering how the project's impact relates to the resources provided.

Project Budget Adheres to NSF Guidelines
Separate budget for each year of proposed funding; budget justification 5 pages or less; budget includes necessary travel, participant costs (if applicable), and administrative costs, classified as indirect costs.

BioSketch Adheres to NSF Guidelines: Create using SciENcv for the preparation of Biosketch.

Access the Rubric & Summary

Check out our complete rubric

Tell us what you think.

References

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