Interactive Session - The NSF Broader Impacts Criterion-Why and How

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Abstract: The goal of the interactive session is to engage the audiences in an interactive manner to enable them develop a better understanding of the broader impact criterion of the National Science Foundation’s Review Criteria and, therefore, prepare proposals that are more responsive to this particular criterion. Specific and individual attention will be given to the following five principal elements of the criterion.

- The advance of discovery and understanding.
- Improvement of the participation of underrepresented groups.
- Enhancement of the education/research infrastructure.
- Broad dissemination of results.
- Benefits of the activity to society at large.

After brief introductory remarks, participants will generate ideas and activities that can be incorporated into their proposals, which are responsive to each of the listed elements. Following each of the participants’ efforts, NSF Program Officers will comment on the proposed ideas/activities as well as provide examples of exemplary practices. Suggestions will be placed in the context of the specific program or program track. The session will be devoted to an interactive exploration of the five elements noted above.

Index terms - National Science Foundation, education and research proposals, review criteria, broader impacts.

INTRODUCTION

Proposals submitted to the National Science Foundation are evaluated using two merit review criteria: intellectual merit and broader impact. The experience of NSF Program Directors has demonstrated that most proposers have little difficulty addressing the issue of intellectual merit but often fail short of adequately addressing the matter of broader impact. To assist proposers, NSF has developed a set of potential considerations that are used in assessing the broader impacts of a proposed educational and/or research activity. Proposers can use these considerations as a means to develop proposed project activities that will contribute to the broader impacts of the project.

The NSF list of considerations is not meant to be exhaustive and proposers are encouraged to be creative in their approaches to demonstrate and ensure the broader impacts of their project. Such approaches should be consistent with the overall scope and objectives of the project and compatible with the interests of the proposer.

As noted above, NSF has organized potential broader impacts activities into five groupings. This list should not be considered exhaustive but any broader impacts activity must be credible and consistent with the NSF description: i.e.,

“How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?”

COMPONENTS OF BROADER IMPACTS CRITERION

Advance Discovery and Understanding While Promoting Teaching, Training and Learning

The integration of research and education is one of the so-called three core strategies that guide NSF in establishing priorities, identifying opportunities and designing new program and activities. The view is that integration of research and educational at all levels will assure that the findings and methods will be quickly and effectively disseminated in a broader context and larger audience.

Broader Participation of Underrepresented Groups

One of NSF’s strategies is to broaden participation and enhance diversity in its programs. Depending on the institution, the geographical area and the specific academic discipline, individually or collectively, this could encompass women, Native Americans, African Americans and Hispanics. Thus, a broader impact could be achieved by structuring activities to attract and retain students from one or more of these groups.
Enhance Infrastructure for Research and Education

NSF invests in state-of-the-art tools for research and education including instrumentation, telescopes, vessels and aircraft, research networks, computers, digital libraries, and large databases. The extent to which these tools are accessible by the larger scientific and engineering community represents the potential broader impact of the particular tool.

Broad Dissemination to Enhance Scientific and Technological Understanding

NSF expects the results of research findings and educational innovations to be shared with the broader scientific/engineering community through peer reviewed journal articles, conference proceedings papers, conference presentations, websites, workshops and other forums. PIs are expected to share data, samples, physical collections, and other supporting materials with other researchers within a reasonable cost and time framework.

Benefits to Society

NSF has an expectation that discoveries, developments and innovations will be shared with and used in service to society. Orienting research findings to education of the public and promote better understanding of a variety of issues such as the environment, technology, health and safety, and others contribute to public welfare.

CONCLUSION

The interactive session will provide an opportunity to fully explore the rationale and means to address the NSF broader impact review criterion in research and educational proposals.