Evaluation Practices at the National Science Foundation

ESF Member Organisation Forum
Evaluation of Funding Schemes and Research Programmes – Expectations, Practices, and Experiences
22 October 2007
Berlin, DFG
Background

- NSF’s Mission: Promote the progress of science; advance the national health, prosperity, and welfare; and secure the national defense.

- NSF OIG’s Mission: Conduct independent and objective audits, investigations, and other reviews to promote the economy, efficiency, and effectiveness and safeguard the integrity of NSF programs and operations.
Overview of NSF

- Annual budget of $5.92 billion (USD)
- Workforce of about 1,700
- Seven scientific directorates and 3 program offices
- Annual activity:
  - Over 40,000 proposals processed
  - About 10,500 new awards made
- Approximately 32,000 active awards at any given time
Funding Mechanisms

- Grants
  - Primary funding mechanism
  - Research projects conducted by individual investigators or small groups of investigators

- Cooperative Agreements
  - Projects that require substantial agency involvement, such as research centers or multi-user facilities

- Contracts
  - Products, services, and studies such as program evaluations
Research Awards Selected Through Merit-Based Reviews

- Two merit review criteria
  - Intellectual Merit
  - Broader Impacts

- Additional criteria may be used, depending on a program’s goals
Overview of NSF’s Performance Assessment Process

Diagram showing the Performance Assessment Process with steps labeled:
- GGRA: Ideas, Tools, People, Organizational Excellence
- PART: Program Purpose and Design, Strategic Planning, Program Management, Program Results and Accountability
- R&D Criteria: Relevance, Quality, Performance

Components include:
- Strategic or Long-Term Planning
- Scientific Advisory Committee Reviews
- NSF Performance Planning
- Advisory Committee for GGRA Performance Assessment
- Business and Operations Advisory Committee
- Committees of Visitors
- Merit Review
- Project Reports
- Program Assessment Ratings Tool
- Staff Performance Assessments Directly Linked to Mission and Goals

Abbreviations:
- GGRA: The Government Performance and Results Act of 1993
- PART: Program Assessment Rating Tool
- R&D: Research and Development
Committees of Visitors and Advisory Committees

**COVs**
- Panels of external experts
- Review each program every 3 – 5 years
- Evaluate the integrity and efficiency of processes used for proposal review and program decision-making
- Provide a retrospective assessment of the quality of results of NSF’s investment

**ACs**
- External experts with broad experience in academia, industry and government
- Provide advice on priorities, address program effectiveness
- Review COV reports and examine responses to COV recommendations
Government Performance and Results Act of 1993 (GPRA)

- Requires federal agencies to conduct strategic planning and measure performance
- NSF established the Advisory Committee for GPRA Performance Assessment (AC/GPA)
  - Comprised of experts from various fields of science, engineering, mathematics, and education
  - Reviews NSF-wide portfolio to determine progress towards strategic goals
  - Relies on COV reports, internal and external directorate assessments of programs, individual project reports, and outstanding accomplishments identified by the programs
Evaluation Practices

- Relies on variety of reviews that provide feedback on the merit review process

- Individual programs may contract for formal evaluations
Examples of Recent Program Evaluations


- Program designed to foster organized group research on materials in the academic community
- Examined the impact of the MRSEC program and provided guidance for the future
- Conducted by the National Research Council/National Academy of Sciences
Examples of Recent Program Evaluations

“Lessons from a Decade of Mathematics and Science Reform: The Local Systemic Change through Teacher Enhancement Initiative” (December 2006)

- Content-focused teacher professional development program
- Examined impacts on teachers and teaching after participating in professional development
- Evaluation conducted by Horizon Research, Inc.
Examples of Recent Program Evaluations

“Impact on Industry of Interactions with Engineering Research Centers – Repeat Study” (December 2004)

- Program supports government-industry-university partnerships to strengthen competitive position of U.S. firms
- Examined extent industrial ERC members used different ERC activities and resources and benefits received
- Evaluation conducted by SRI International
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