Informal Science Education (ISE)

National Science Foundation
Directorate for Education and Human Resources
    Division of Elementary, Secondary and Informal Education

Preliminary Proposal Due Date(s) *required):*

March 03, 2003

August 15, 2003

Full Proposal Deadline(s) (due by 5 p.m. proposer's local time):

May 30, 2003

November 17, 2003

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Informal Science Education (ISE)

Synopsis of Program:

ISE activities provide rich and stimulating opportunities outside formal school settings where individuals of all ages, interests, and backgrounds increase their appreciation and understanding of science, technology, engineering, and mathematics (STEM).

Cognizant Program Officer(s):

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- David A. Ucko, Program Director, [exhibits and Internet programs], Directorate for Education & Human Resources, Division of Elementary, Secondary, & Informal Education, 885 S, telephone: (703) 292-5126, fax: (703) 292-9044, email: ducko@nsf.gov

Applicable Catalog of Federal Domestic Assistance (CFDA) Number(s):

- 47.076 --- Education and Human Resources

Eligibility Information

- **Organization Limit:** None Specified.
- **PI Eligibility Limit:**

  An individual may serve as the Principal Investigator (PI) on only one proposal per round of competition.

- **Limit on Number of Proposals:** None Specified.

Award Information

- **Anticipated Type of Award:** Standard or Continuing Grant
- **Estimated Number of Awards:** 40 - 60
- **Anticipated Funding Amount:** $30 million, pending availability of funds

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Preliminary Proposals:** Submission of Preliminary Proposals is required. Please see the full text of this solicitation for further information.
- **Full Proposal Preparation Instructions:** This solicitation contains information that supplements the standard Grant Proposal Guide (GPG) proposal preparation guidelines. Please see the full text of this solicitation for further information.

B. Budgetary Information

- **Cost Sharing Requirements:** Cost Sharing is not required.
- **Indirect Cost (F&A) Limitations:** Not Applicable.
- **Other Budgetary Limitations:** Not Applicable.

C. Due Dates

> **Preliminary Proposals** *(required)* **:**
> > March 03, 2003
> > August 15, 2003
- **Full Proposal Deadline Date(s)** (due by 5 p.m. proposer's local time):
  > May 30, 2003
  > November 17, 2003

Proposal Review Information

- **Merit Review Criteria:** National Science Board approved criteria. Additional merit review considerations apply. Please see the full text of this solicitation for further information.

Award Administration Information

- **Award Conditions:** Standard NSF award conditions apply.
- **Reporting Requirements:** Additional reporting requirements apply. Please see the full text of this solicitation for further information.

TABLE OF CONTENTS

A. THE DIVISION OF ELEMENTARY, SECONDARY, AND INFORMAL EDUCATION

Goals and Objectives.

Science, technology, engineering, and mathematics (STEM) education, pre-Kindergarten through grade 12 (preK-12), lays the foundation of knowledge and skills needed by future researchers, educators, and technologists; students pursuing post-secondary education in other disciplines; and individuals directly entering the workforce. The Division of Elementary, Secondary, and Informal Education (ESIE) supports the National Science Foundation's mission of providing leadership and promoting development of the infrastructure and resources needed to improve preK-12 STEM education throughout the United States.

ESIE's comprehensive and coherent research-based program portfolio develops the nation's capacity to support high-quality STEM education. Innovative instructional materials and student assessments, as well as new models for the delivery of teacher professional development contribute to STEM classroom environments that enable all students to achieve their full potential. Moreover, ESIE's informal learning opportunities via media, exhibit, and community-based programs increase scientific and technological literacy, as well as develop life-long learning skills that benefit students of all ages. All ESIE programs contribute to development of a knowledge base that informs practice and of partnerships that leverage expertise and resources of major education stakeholders nationwide, including higher education, state and local education agencies, school districts, informal science education institutions, and industry.

Program Overviews.

Programs administered by ESIE in FY 2003 include:

- ***Instructional Materials Development (IMD)*** -- IMD develops high-quality, research-based instructional and assessment materials for students that enhance knowledge, thinking skills, and problem-solving abilities of all students, as well as incorporate recent advances in disciplinary content, research on teaching and learning, and instructional technologies. IMD materials are intended to be implemented nationwide and address learning in diverse settings.

- ***Teacher Enhancement (TE)*** -- TE develops models for strengthening skills of the teacher workforce by expanding and deepening their understanding of content, pedagogy, and instructional technologies; by heightening awareness and deepening understanding of the diverse learning needs of students; by grounding continued professional development in the context of school structure and organization; and by developing a cadre of teachers and administrators who can effectively lead the reform of science, mathematics, and technology education.

- ***Centers for Learning and Teaching (CLT)*** -- CLT focuses on the advanced preparation and professional development of STEM practitioners and educators, as well as establishment of complex, meaningful partnerships among education stakeholders, especially Ph.D.-granting institutions, school systems, and informal education performers. Its goals are to rebuild and diversify the national infrastructure for STEM education; to increase the number of K-16 educators capable of delivering high-quality content, instruction, and assessment; and to provide substantive research opportunities into the nature of learning, teaching strategies, as well as education reform policies and outcomes.

- ***Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST)*** -- PAEMST, administered on behalf of the White House, recognizes exemplary careers of elementary and secondary teachers of mathematics and science.

- ***Informal Science Education (ISE)*** -- ISE provides stimulating experiences for STEM learning outside of formal classroom environments through media, exhibits, and community-based programming. Its goals are to increase interest in, understanding of, and engagement with, STEM disciplines by individuals of all ages; to establish linkages between informal and formal education; and to stimulate parents and others to support their children's STEM learning endeavors and to become informed proponents for high-quality, universally available STEM education.

- ***Communicating Research to Public Audiences --*** Through *Communicating Research to Public Audiences,* ISE provides an opportunity for Principal Investigators of NSF-funded research projects to explain in non-technical terms the methods and/or results of their research, and to promote science literacy for the general public in an out-of-school setting.

- ***Information Technology Experiences for Students and Teachers (ITEST)*** -- The ITEST program seeks to increase the opportunities for students and teachers to learn about, experience, and use information technologies within the context of STEM disciplines, including Information Technology (IT) courses. It responds directly to the concern about shortages of technology workers in the United States and builds on the earlier NSF program for youth, *After School Centers for Exploration and New Discovery (ASCEND)*. Supported projects are intended to provide opportunities both for middle and high school students and for their teachers to build the skills and knowledge needed to advance their study, and to function and contribute in a technologically rich society.

- ***Advanced Technological Education (ATE)*** -- Jointly managed by the Division of Undergraduate Education (DUE) and ESIE, ATE promotes improvement in technological education at the undergraduate and secondary school levels by supporting curriculum development; preparation and professional development of college faculty and secondary school teachers; internships and field experiences for faculty, teachers, and students; and other activities. With an emphasis on two-year colleges, the program focuses on the education of technicians for the high-technology fields that drive our nation's economy.

ESIE has identified three issues that should be integrated, as appropriate, into funded projects across its programs.

- ***Evaluation*** -- ESIE has a strong commitment to evaluation that assesses the effectiveness and impact of its projects in enhancing learning and instruction in STEM disciplines in both formal and informal education settings. All projects should be based upon the research in cognitive science.

- ***Instructional Technology*** -- Projects should capitalize on educational technologies and electronic networking in the development of materials, instructional strategies, and professional development in a manner that uses the technology thoughtfully and ensures accessibility to a quality education for all students.

- ***Promoting Representation in STEM Education and Careers*** -- All ESIE programs have the goal of increasing access, participation, and success of women, underrepresented minorities, and persons with disabilities in STEM education. ESIE is particularly interested in increasing the numbers of such students who will pursue advanced study and careers in STEM areas, including the teaching of science, technology, and mathematics, grades K-12.

ESIE programs, other than ISE, are described in separate program announcements. Updates may be issued, as needed, to announce relevant changes or additions. To stay current with ESIE program offerings, periodically visit the ESIE Web Site, http://www.ehr.nsf.gov/ehr/esie/; for ATE, the DUE Web Site, http://www.ehr.nsf.gov/ehr/due/.   All NSF publications referenced in this document are available via the NSF Online Document System, http://www.nsf.gov/cgi-bin/pubsys/browser/odbrowse.pl.

B. INFORMAL SCIENCE EDUCATION (ISE)

Program Overview

The purpose of the Informal Science Education (ISE) program is to support projects designed to increase public interest in, understanding of, and engagement with science, technology, engineering, and mathematics (STEM). The outcome of all ISE projects is an informed citizenry that has access to the ideas of science and engineering and understands their role in enhancing their quality of life and the health, prosperity, welfare, and security of the nation.

Informal education is the life-long learning process in which every person acquires knowledge, skills, attitudes, and values from daily experiences and resources in his or her environment. Informal learning is self-directed, voluntary, and motivated mainly by intrinsic interests, curiosity, exploration, and social interaction.

All ISE projects have as their primary audience the informal learner -- from young child to senior citizen. Informal learning, in contrast with formal learning, refers to activities that are not primarily for school use or part of an ongoing school curriculum. Informal learning presumes voluntary participation as opposed to the mandatory participation of a credited school activity.

The goals of the Informal Science Education program are to encourage and support projects that:

- engage the interest of children and adults in STEM in daily life so that they develop capabilities: scientific and technological literacy, mathematical competence, problem-solving skills, and the desire to learn

- bring together individuals and organizations from the informal and formal education communities, as well as from the private and public sectors, to strengthen STEM education in all settings; and

- develop and implement innovative strategies that support the development of a socially responsible and informed public, and demonstrate promise of increasing participation of all citizens in STEM.

Areas of Special Interest

ISE encourages the field to strengthen its many current positive approaches to informal education for the U.S. public. The field also is challenged to expand the scope of informal science education activities in order to have greater impact in areas of particular need. Specifically, ISE puts special emphasis in the following areas in order to promote and facilitate this desired impact:

Building capacity within and among informal science education institutions.
Capacity building involves strengthening organizations so that they can achieve their mission in an effective manner. While many informal science education institutions share a similar mission, many are small and possess limited resources, especially when measured against the needs of their constituents for quality STEM education. The results of capacity building are to improve an organization's capacity to deliver programs; to broaden the scope and range of its activities; and to respond to change with program innovations and improvements.

Effective capacity-building projects will provide opportunities for peer-to-peer networking, mentoring, and information sharing; begin with a thorough assessment of needs; and apply best practices. To promote capacity building within and among informal science education institutions, ISE encourages partnerships between larger institutions and smaller institutions in the development of projects that will serve both. ISE is especially interested in projects that address critical needs for informal science education in less-populated regions of the nation, in rural areas, and in smaller communities. ISE also encourages projects that seek to build capacity among similar institutions that have similar needs.

Encouraging collaborations within communities and regions.
Through effective combination of diverse resources and expertise, collaborations can promote creativity and significantly broaden project impact. ISE encourages development of collaborative projects that bring together individuals and organizations within communities and regions to increase the public understanding of STEM. In smaller communities where no single institution serves large numbers of people, collaborations among a number of institutions hold the promise of reaching a larger audience. For example, a small science center might partner with several community organizations, media outlets, businesses, and individuals to reach across an entire community or region. One organization should assume the lead in overall management of the project.

Increasing participation of underrepresented groups in science and engineering.
The need to support the development of a "diverse, internationally competitive and globally-engaged workforce of scientists, engineers and well-prepared citizens" is prominent in the NSF's Strategic Plan for 2001-2006. Activities funded under the ISE program contribute to the accomplishment of this goal by offering effective approaches to stimulate increased participation of underserved and underrepresented groups (e.g., minorities, women, girls, persons with disabilities, and youth and adults from economically disadvantaged areas) in STEM. By matching program content to the needs of diverse audiences, targeting diverse communities, partnering with youth and community organizations that serve these audiences, and incorporating strategies to reach diverse audiences in project dissemination plans, the ISE program advances the goal of scientific and technological literacy for all citizens.

Modeling effective after-school programs
The burgeoning after-school movement provides the nation's youth with activities between the hours of 3 p.m. and 6 p.m. The majority of these programs are offered by schools (69%) and nearly all of them are located on-site (National Association of Elementary Principals, 2001). Informal science education facilities can support after-school programs by creating viable models and high-quality materials that address the developmental needs of youth, while presenting content in an engaging manner that exemplifies best practices in informal STEM education. ISE invites proposals that strengthen after-school programs nationwide by providing youth with experiences that complement, but do not duplicate formal classroom experiences, and through exemplars and curricula especially designed for the informal learning environment. Proposed programs must include plans to pilot and evaluate models and materials (as appropriate), as well as a comprehensive dissemination strategy with commitments from after-school program providers, informal science education sites, and other partners to ensure *large regional* or *national dissemination*.

These activities are not intended to duplicate the Information Technology Experiences for Students and Teachers (ITEST) program (NSF 02-147), which supports comprehensive, year-round enrichment programs for middle and high school students serving local or regional *populations.*

II. PROGRAM DESCRIPTION

A. PROJECT CHARACTERISTICS

Informal Science Education (ISE) projects have strong intellectual merit and demonstrate the capacity for broad impacts.

Intellectual Merit

ISE projects provide rich and stimulating opportunities for informal learning. Through these activities, individuals of all ages, interests, and backgrounds may increase their appreciation, understanding, and use of science, technology, engineering, and mathematics (STEM). ISE projects are well-conceived and organized; are conducted by well-qualified individuals and teams; explore innovative concepts and applications; and advance knowledge across the informal education field.

STEM Content
ISE projects focus on STEM concepts and themes, processes and skills, and inquiry. Strategies must be in place for ensuring accuracy of content, from inception to implementation, and appropriateness to the age or level of the target audience(s). While a project must focus on STEM content, ISE welcomes proposals that connect to the humanities, as well as those submitted by institutions devoted to the humanities. ISE also seeks to inform the public about current scientific research and discoveries and to involve the public in scientific research.

When appropriate, projects are expected to align with national, state, and local science, technology, and mathematics standards to guide project content and to promote linkages with formal education. Projects are also encouraged to include information about careers and career paths in STEM fields.

Innovation
ISE encourages proposals for projects that have at their core a process for innovation. Innovation can be incremental

or sweeping. It can take many forms, including changes in what is being done, how it is being done, where it is being done, or with whom. Opportunities for innovation in ISE projects include creating a new program, service, or product; introducing a new or improved strategy or method; reaching a new audience; or serving an unmet need.

Prototyping is an important part of the iterative process for matching the project with the needs of the audience. Projects should conduct research, when possible, to determine the effectiveness of innovative techniques for motivating interest in, and informing the public about, STEM topics. Proposals should also include plans for informing the field about lessons learned.

Project Team
Project leaders, teams, and advisors should collectively provide the expertise and experience necessary to conduct the project, including expertise and experience in the STEM content, in STEM education, in the medium or media, and in evaluation. Projects are encouraged to recruit and include members of underserved groups on project teams.

Project Plan
Project plans for ISE projects are based on thorough research and reflect careful planning by the project team and advisors. Effective plans have a sound approach with respect to disciplinary content and/or instructional methods. Proposals should be explicit about how the project plan relates to the project's goals and intended outcomes, how the results of evaluation and advisors will influence project development, and what evidence will be accepted that these goals have been met.

All ISE proposals should include a timeline with monthly intervals, indicating major milestones of the project's progress toward completion. In general, ISE supports projects that are in the early stages of development and take full advantage of evaluation to confirm or revise project plans in order to be responsive to the needs of the target audience.

Broader Impacts

ISE projects are intended to reach large audiences and have significant community-wide, regional, or national impact. ISE encourages proposals for projects that not only attract and engage large and diverse audiences but also actively seek to include underserved audiences, including projects that address critical needs for informal science education in less populated regions of the nation. All projects are expected to disseminate findings and products in order to maximize their impact.

Audience Needs
ISE projects identify the target audience(s) and focus on their needs. Proposals should include what is known about the target audience, such as the size of audience, the characteristics of audience, and results of any front-end evaluation conducted. While the primary audience will be informal learners, proposals should also describe the needs of other audiences, such as students in school, students on field trips, teachers, or parents who may be served.

Collaboration
ISE encourages proposals for projects in which individuals and organizations find new ways to work together to achieve their goals and contribute to society. ISE recognizes that there are many benefits from partnering; that strategic alliances leverage competencies of each partner to create value; that alliances can take many different forms; and that cross-sector alliances create distinctive challenges but also great opportunities. Emphasizing collaboration fosters capacity building in the field and promotes community-wide and region-wide participation.

Evaluation
All ISE proposals should include plans for rigorous evaluation, based on comprehensive quantitative and qualitative information, in order to document project impact, inform the field, and demonstrate potential for dissemination and replication. It is expected that ISE projects will include front-end, formative, and summative evaluation at a level commensurate with the nature and scope of the project. Evaluation plans should be consistent with the project's goals, and the summative evaluation should reflect the intended outcomes and impacts for the target audiences.

Dissemination
ISE proposals should include plans for dissemination to target audiences, including marketing strategies and

commitments from participating organizations, venues, and media outlets. Projects should also contribute to enhancing the infrastructure of informal science education through activities such as publication, electronic networking, technical assistance, and professional development. ISE also encourages publication and sharing of summative evaluation reports with the field.

B. TYPES OF PROJECTS

Informal Science Education (ISE) projects include, but are not limited to, exhibits or education programs at science and technology centers, natural history museums, nature centers, botanical gardens, arboreta, and zoos; television series and programs for youth or the general public; films and other media on STEM topics; informal education programs and activities at libraries, universities, and community and youth-based organizations; and Web-based informal learning activities.

Exhibit Projects
ISE supports both traveling and permanent exhibits that are visitor-centered, inquiry-based, and promote active learning. Project narratives for these projects are expected to include the following information that relates specifically to the exhibit format: a description of the STEM content and how it will be communicated to the target audience(s), an exhibit walk-through from the visitor's perspective that highlights key design elements and visitor experiences, details about the exhibit's accessibility, logistics regarding the exhibit's traveling (if applicable), and the evaluation procedures that will be implemented (front-end, formative, and summative evaluations are expected in all exhibit proposals). Where possible, projects are encouraged to include smaller versions of exhibits or exhibit components for dissemination to smaller venues, such as small museums and science centers, libraries, and community centers. To the extent feasible, and keeping within professional museum and conservation standards, efforts should be made to ensure that exhibits are designed and fabricated using the most environmentally-friendly materials and processes possible.

Media Projects
Media projects are generally designed for national distribution. If a STEM topic is relevant to a particular area of the country, media projects designed for regional broadcast can be supported. Viable proposals should include documentation of interest or commitment from a major national or, if appropriate, regional broadcast or cable outlet, or an indication of interest and distribution plan for a non-broadcast film.

Proposals for media projects must clearly describe the scope of the science or technology and how it will be presented. In addition to an explanation of the program/series content and format in the body of a proposal, competitive submissions generally include a treatment for one or more programs as a supplementary documentation. Similarly, proposals should include a plan for outreach that is designed to extend the learning experience of the target audience for the media component.

Youth and Community Programs
Youth and community projects make science accessible by bringing informal science activities into community settings, as well as museums, science centers, universities, and a variety of neighborhood sites. The target audiences for these projects are usually parents, children, families, and adult learners who participate in innovative experiences that broaden their understanding of science concepts, topics, and processes. Consequently, goals should be stated in terms of the intended impact on audiences' knowledge, attitudes, and behavior related to science. Creative project designs should provide participants with authentic experiences in STEM. For example, successful projects encourage family involvement in science and mathematics activities, allow participants to contribute to scientific research, and engage Web visitors in interactive learning environments that develop inquiry and analysis skills. Project design should address such issues as participant access and language barriers. Youth and community projects result in high-quality program designs and the resources to support them including kits, activity materials, workbooks, information for parents, and multi-media products for national dissemination. Partnerships and collaborations among science centers, educational institutions, youth groups, community organizations, and other entities could leverage resources to common goals.   ISE would support protoype projects that can be piloted and then disseminated through a network of partnering organizations.

Internet and Web Projects
The Internet and the World Wide Web are emerging media for informal science education. Effective Web-based ISE projects should be interactive and use a variety of techniques to hold the attention of the learner; exemplify scientific processes; encourage off-line follow-up activities; provide feedback and guidance to users; have multiple entry points; and accommodate users with special needs to the extent possible. ISE projects often utilize Web connectivity to supplement and support other project activities, such as bringing a remote or global science or technology activity into an exhibit hall. Other examples include a Web site to augment and extend the learning that begins by viewing a film or visiting an exhibit; or to promote a stand-alone, independent learning activity. Additionally, ISE encourages applied research projects to better understand informal science learning within the Web and Internet environments. ISE does not support institutional Web sites that primarily serve as basic information resources about institutions (such as location, hours, admission costs, current exhibits, etc.) or as marketing tools.

Applied Research Projects
ISE has a strong commitment to applied research that assesses the effectiveness and impact of funded efforts in enhancing life-long STEM learning in informal educational settings. The purpose of applied research projects is to ensure that ISE activities are firmly grounded in research and that projects benefit from this knowledge. Applied research provides important feedback for strengthening the ISE portfolio and for identifying new programmatic directions. Research studies may be of three different types:

- separate applied research efforts that study selected components of the ISE project portfolio or that respond to questions that arise through analysis of an issue of priority to ISE;

- well-defined elements of a proposed ISE project; or

- supplements to an existing project to address questions that have arisen during project implementation. In these cases, proposed studies must generate important feedback to the on-going project.

Principal Investigators (PIs) interested in supplementing a current project with a related applied research effort should contact their cognizant NSF Program Officer. ISE will not accept proposals under current consideration for funding by the EHR Division of Research, Evaluation, and Communication.

C. OTHER GRANT CATEGORIES:

Planning Grants

A planning grant can be used for any type of informal science education activity. The maximum award size is $50,000. Applicants should be sufficiently advanced in their project conceptualization to be able to present a developed outline, including the suggested approach of the final project and a clear description of the planning activity's goals and methods. Planning grants are not intended to implement projects. The purpose of planning grants are:

- to improve the quality of projects by strengthening, for example, the STEM content, the understanding and knowledge of the target audience, the innovation and creativity in the project's format and design, the diversity and quality of advisors, and the scope of the evaluation;

- to increase the opportunity for a larger number of organizations, especially smaller organizations, to develop competitive ISE proposals;

- to promote collaborations among individuals or institutions; and

- to identify and select a full range of appropriate materials and/or techniques to broaden the impact of a project.

Conferences, Symposia, and Workshops
Conferences, symposia, and workshops assemble experts for purposes of discussing issues of relevance to the informal learning community. This might include topics such as theory and research in informal learning, findings from meta analyses of summative evaluations, or promoting partnerships and collaborations. Conferences are one way that ISE can provide support to build capacity. Request for support may include publication costs. Requests should generally be made at least one year in advance of the scheduled date. Conferences or meetings, including the facilities in which they are held, funded in whole or in part with NSF funds, must be accessible to participants with disabilities. The range of these awards is between $50,000 to $200,000. For details on proposal submission see GPG, Chapter II, Section D.7.

Small Grants for Exploratory Research (SGER)
Small Grants for Exploratory Research (SGER) in informal learning support activities such as (1) preliminary work on untested and novel ideas; (2) ventures into emerging research areas; (3) application of new expertise and new approaches to "established" research topics; (4) research having severe urgency with regard to availability of, or access to, data, facilities, or specialized equipment; and (5) efforts of similar character likely to catalyze rapid and innovative advances. SGER proposals must include an explanation of why the proposal should be considered a SGER. The maximum SGER award is $100,000. It is highly recommended that a Program Officer be

contacted before submission of a SGER proposal. For details on proposal submission, see GPG, Chapter II, Section D.1.

D. SELECTED REFERENCES

Proposed ISE projects should incorporate findings of relevant research on learning and best practice in informal settings. References could include, for example:

Crane, V., Nicholson, H., Chen, M., Bitgood, S. (1994). Informal Science Learning: What Research Says About Television, Science Museums, and Community-Based Projects. Dedham, MA: Research Communications Ltd.

Falk, J. (ed.) (2001). Free-Choice Science Education: How We Learn Outside of School. New York: Teachers College Press.

Gregory, J., Miller, S. (1998). Science In Public: Communication, Culture, and Credibility. Cambridge, MA: Perseus Publishing.

Hein, G. E. (1998). Learning in the Museum. London: Routledge.

Jolly, E. (2002). Confronting Demographic Denial: Retaining Relevance in the New Millenium, ASTC Dimensions, January-February 2002. Washington, DC: Association of Science-Technology Centers.

National Association of Elementary Principals (2001). *After School Programs Aide Academic Success, Provide Safe Havens for Children,* Retrieved September 19, 2002, from http://www.naesp.org/afterschool/aspnews.htm.

National Science Board. (2002). Science and engineering indicators 2002. Washington, DC: U.S. Government Printing Office.

U. S. Department of Commerce, National Telecommunication and Information Administration (2002). How Americans Are Expanding Their Use of the Internet. Washington, DC.

III. ELIGIBILITY INFORMATION

The categories of proposers identified in the Grant Proposal Guide are eligible to submit proposals under this program announcement/solicitation.

An individual may serve as the Principal Investigator (PI) on only one proposal per round of competition.

IV. AWARD INFORMATION

Duration and Funding Level:

Full and Collaborative Proposals: The project duration is expected to be from one to five years. The level of funding for grants depends on the nature and scope of the project. Amounts range from approximately $50,000 to $3 million.

Planning Grants: The project duration is expected to be no more than two years. The maximum award for planning grants is $50,000. The maximum allowable indirect cost rate is 10% of the total requested budget.

Conferences, Symposia, and Workshops: The project duration is expected to be no more than two years. The range for these awards is approximately $50,000 to $200,000.

Small Grants for Exploratory Research (SGER): The project duration can be no more than two years and the maximum award for a SGER is $100,000.

A. Proposal Preparation Instructions

Preliminary Proposals *(required):*

An ISE program staff response to a preliminary proposal is required prior to the submission of a full proposal**.**   (Preliminary proposals are **not** required for planning grants, conference grants, or Small Grants for Exploratory Research (SGER).)   A preliminary proposal provides the ISE staff with an opportunity to comment on the project's responsiveness to program goals and priorities and on the project's potential to compete successfully with other proposals in the merit review process.

A PI should submit a preliminary proposal as early as possible prior to the target date in order to ensure adequate time to obtain staff reviews that provide input for developing a final proposal. Preliminary proposals must be submitted in FastLane no later than 5:00 PM local time on the preliminary proposal due date to be ensured the review required for submission of a full proposal. (Please Note: In FastLane, the preliminary proposal is referred to as *preproposal*.)

NSF staff and/or ad hoc reviewers review preliminary proposals. Submission of a full proposal is encouraged or discouraged based upon the reviewers' perception of the likelihood that a proposal, based on the ideas presented, will be competitive in the formal, merit review process. *This is an advisory opinion only*, however, and *full proposals may be submitted in either event*. The written response provides information to the applicant to strengthen the proposal. Reviews are returned as expeditiously as possible, but in general no later than one month prior to the date for submission of a full proposal.

Submission of a preliminary proposal requires the completion of the following forms in FastLane:

Cover Sheet: Complete the cover sheet in FastLane and **be sure to check the** *preproposal* **box**.

Project Summary: Include a 100-word abstract that clearly identifies the major features of the project.

Project Description: The project description narrative is limited to six single-spaced pages in length. It should sketch, in broad strokes, the essential features of the project including:

- **Need.** A description of the educational need being met, the target audience, and the plan to reach that audience.

- **Goals.** A description of the major goal(s) of the project and alignment with ISE program goals. What evidence will be accepted that demonstrate the goals are being met?

- **Description of the Activity.** Includes the content focus and the design of the project, identifying major components and a timeline. What are the anticipated outcomes? What is the proposed lifespan of the project/activity? When appropriate, indicate how the activity will be sustained following the NSF funded period.

- **Evaluation.** Plans for evaluation including front-end, formative, and summative, as appropriate.

- **Key Personnel.** Identify each key staff member, consultant, and advisor involved in the project and provide a one-sentence description of the qualifications for each and the percentage of time to be devoted to the

project.

- **Dissemination and Ancillary Materials.** Describe plans for the broad dissemination of the products of the project. How will the activity be marketed? Describe any planned ancillary materials that are to be made available to the general public.

- **Linkages with Formal Education.** A description of linkages with formal education, if any, and information on how these linkages will be supported. Indicate potential partnerships that may be developed.

Budget (including Justification): The support requested from NSF should be entered in the NSF Budget forms (NSF 1030) generated in FastLane.

Supplementary Documents: Include a projected total budget with clear indication of the percentage of that budget being sought from non-NSF funding sources, the anticipated sources of other funding, and an indication of how the project will be funded after an NSF award period, if applicable. Other supplementary documents will not be accepted for preliminary proposals without prior written Program Officer approval.

Full Proposal Instructions:

Proposals submitted in response to this program announcement/solicitation should be prepared and submitted in accordance with the general guidelines contained in the NSF *Grant Proposal Guide* (GPG). The complete text of the GPG is available electronically on the NSF Website at: http://www.nsf.gov/cgi-bin/getpub?gpg. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from pubs@nsf.gov.

Full proposals must be submitted via FastLane no later than 5:00 PM local time on the specified deadline date. Submission of full proposals via FastLane requires completion of the following FastLane forms:

Cover Sheet. (See GPG, Chapter II, Section C.2.a) The Cover Sheet must contain all requested information. If project funds are requested from another Federal agency or another NSF program, it must be indicated on the cover sheet. If such funds are requested subsequent to proposal submission, a letter should be sent to the attention of the ISE program identifying the proposal by its NSF proposal number. Proposers are reminded to identify the program solicitation number NSF 03-xx in the program announcement/solicitation block on the *Cover Sheet For Proposal to the National Science Foundation.* Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing. The related preliminary proposal number should be entered on the cover page as well. The title of the project should be typed **exactly** as you wish it to appear in the NSF data file.

The Authorized Organizational Representative (AOR) must electronically sign the proposal Cover Sheet to submit the required proposal certifications. The AOR must provide the required certifications *within five working days* following the electronic submission of the proposal. Further instructions regarding this process are available on the FastLane Web Site at: **http://www.fastlane.nsf.gov**.

Project Summary. (See GPG, Chapter II, Section C.2.b) A one-page (250 word) Project Summary should be prepared, suitable for publication, which presents a self-contained description of the activity that would result if the proposal were funded. It **must** address the two NSF merit review criteria, *Intellectual Merit* and *Broader Impacts*, in separate paragraphs. The summary should be written in the third person and present tense. The initial sentences should describe the nature of the medium being used in the informal learning activity, the disciplinary content of the project, and the primary intended audience. The summary should include an indication of the need being addressed, a statement of the goals and objectives, the evidence that will be accepted that these goals are being met, methods to be employed, potential contribution to the public understanding of STEM, and the broader impacts resulting from the proposed project.

Table of Contents. (See GPG, Chapter II, Section C.2.c) The *Table of Contents* is automatically generated in FastLane.

Project Description (including Results from Prior NSF Support). (See GPG, Chapter II, Section C.2.d) The Project Description contains most of the information that determines whether or not a grant will be awarded. It **must** address the two NSF merit review criteria: *Intellectual Merit* and *Broader Impacts*. Reviewers will use this information in judging the merit of the proposal as described in

this document. The maximum number of pages allowable for the *Project Description* is 15 pages. Page formats should be single-spaced with a clear and legible type size of not smaller than 12-point type and with no less than 2.5 cm margins on all sides.

The narrative section of the proposal should include a project overview, goals and objectives, general project description, qualifications of key personnel who will be conducting the project, anticipated results, and evaluation and dissemination plans. Substantive information essential to understanding the details of complex projects should be submitted as supplementary documents with explicit references in the narrative.

Exemplary project descriptions will contain the elements listed below:

- **Statement of Need**. Describe the educational need being met.

- **Target Audience.** Specify the intended primary audience, which must be informal learners, and indicate the projected number of people to be served by the project. Projects are stronger when they are intended for a particular, focused audience rather than the "general public."

- **Project Goals.** State the project goals in terms of the intended impact on the target audience. This may include a broad scope of goals including STEM knowledge, skills, and affective goals. Describe what evidence will be accepted that the project goals have been met.

- **Project Design.** Describe the overall approach and components of the project. Discuss the scope and depth of the science and technology, and the manner and style in which it will be presented. What is the target audience's experience as they participate in the project? What are the project deliverables? (Detailed examples of the project components, such as exhibit layouts, media treatments, scripts, storyboards, descriptions of learning activities and outreach activities should be submitted as supplementary documents.)

- **Key Staff, Consultants, and Advisors.** Provide a description of the responsibilities and qualifications of the key staff involved in the project and the role of consultants and advisors at each stage of project. Who will ensure content accuracy?

- **Linkages with Formal Education.** When appropriate, indicate how the project content aligns with state or national science, mathematics, or technology standards. What activities and/or materials are being developed that will extend the use by, and impact on, students and teachers?

- **Ancillary Material.** Describe any ancillary material that will be produced.

- **Dissemination.** Describe, as appropriate, how the project will be distributed to reach the target audience, and/or how information about the project and any knowledge gained in developing the project will be conveyed to the informal science education field.

- **Promotion.** Describe the marketing and promotion plans for the project.

- **Evaluation.** Describe the plans for evaluation. Provide the name and credentials of the evaluator/s; general information about the evaluation strategy, process, and methods; and, the evaluation timeline and budget. (Detailed evaluation plans should be included in the supplementary documents).

- **Timeline.** Provide a month-by-month schedule for each year of the project that indicates the major development steps for all the aspects of the project.

- **Sustainability.** Describe the plans to continue the project beyond the period of the grant, as appropriate.

Results from Prior Support (See GPG, Chapter 11, Section C.2.d.iii) If the prospective PI or co-PI(s) received support for related NSF activities within the past five years, a description of the project(s) and outcomes **must** be provided in sufficient detail to enable reviewers to assess the value of results achieved. Past projects should be identified by NSF award number, funding amount, period of

support, title, summary of results, and a list of publications and formal presentations that acknowledge the NSF award (do not submit copies of the latter). Evaluation data should be clearly described. Details regarding evaluation data should be put into the supplementary documents. PIs must have submitted a final report for any completed NSF-funded project, or a new grant may not be awarded.

References Cited (See GPG, Chapter II, Section C.2.e) Any literature cited should be specifically related to the proposed project. The Project Description should make clear how each reference has played a role in the motivation for, or design of, the project.

Biographical Sketches (See GPG, Chapter II, Section C.2.f) Biographical information must be provided for each person listed as senior personnel on the budget form, as well as key consultants and advisors. (No more than two pages per person.) Include career and academic credentials and an e-mail and mailing address.

Budgets (including Justifications) In addition to the NSF Budget forms (NSF 1030) generated in FastLane, a *detailed total project budget and budget explanation* should be submitted as Supplementary Documentation. Include a spreadsheet that shows for each year of the project, and by line item, the amount requested from NSF, the amount leveraged, and the total project cost.

NSF will support a portion of the total project budget for ISE projects. It is expected that NSF support will be leveraged by resources from other sources. The amount of ISE support will depend largely on scope and size of the project. Generally, for exhibit and youth- and community-based projects, ISE will generally support up to *two-thirds* of a total project budget. For media projects (excluding large-format films), ISE will generally support up to *one-half* of the production costs and up to two-thirds of the costs of advisors, outreach, and evaluation. For large-format films, ISE will generally support up to *one-third* of the production costs and up to one-half of the costs of advisors, outreach, and evaluation. In general, ISE does not support general operating expenses, facilities, capital development, or equipment costs (ISE will consider support for equipment intended for exhibits or for direct use by the informal learner, but not for equipment used by project staff to develop the project.).

(**Current and Pending Support Form** (See GPG, Chapter II, Section C.2.h)

Facilities, Equipment, and other Resources (See GPG, Chapter II, Section C.2.i)

Supplementary Documentation (See GPG, Chapter II, Section C.2.j)   Reviewers are often asked to read and assess a substantial number of competing proposals. For this reason, the project description alone should provide sufficient information so that a reviewer unfamiliar with the content or context of the project can make an informed judgment. In some cases, it may be critical to convey more detailed information to demonstrate levels of competence or expertise, to document commitment of personnel or other resources, to demonstrate the quality of ancillary materials, or to provide other relevant information. For example, for a television series, the narrative would outline the scope of the series and briefly describe the programs (outlines, treatments, or scripts might be in the supplementary documents), provide a general description of evaluation plans (detailed plans might be in the supplementary documents); and describe major elements of outreach plans (detailed plans might be in the supplementary documents). Additionally, the proposal may refer to Web Sites that contain this type of supplementary material. Presentation of such materials should be thoughtful and concise. Supplementary materials that cannot be submitted electronically must be mailed directly to the ISE program, clearly labeled with the proposal number and title of project. Fifteen (15) copies of any ancillary materials such as videocassettes or exhibit layouts are required (Five [5] copies for Plannying Grants and Conference Grants). Although NSF does not require reviewers to read supplementary materials, ISE reviewers are asked to read any documents explicitly referenced in the proposal description.

Special Grant Categories:

Planning Grants
Planning grant proposal may be submitted anytime during the year using the same format as a full proposal, although the project description may be less detailed. Proposals should be submitted via the FastLane system.

ISE will support planning grants under the following conditions: (1) they are small scale or exploratory in nature; (2) the award does not exceed $50,000 with a maximum indirect cost rate of 10%; (3) the duration does not exceed two years; and (4) awards are non-renewable. Continued support may be requested only through submission of a full proposal. A final project report is required. Full proposals that result from planning grants require submission of a preliminary proposal.

Conference, Symposia, Workshops (See GPG, Chapter II, Section D.7)

ISE may support a few well-focused conferences or workshops whose products inform the field. Although these proposals are generally briefer than full proposals, proposals should be submitted to NSF using the guidelines for full proposals described above.

Small Grants for Exploratory Research (SGER) (See GPG, Chapter II, Section D.1) SGER proposals must be transmitted to NSF using FastLane. The box, *Small Grant for Exploratory Research,* must be checked on the Cover Sheet form. Project descriptions for SGER proposals should be two to five pages in length and include clear statements as to why the proposed research should be considered exploratory and high risk, the nature and significance of potential impact on the field, and why a SGER grant is suitable for supporting the work. SGER proposals are not subject to external peer review. The budget request is not to exceed $100,000. Project duration will normally be one year, but no more than two years. Renewed funding may only be requested through submission of a non-SGER proposal, which will be subject to full merit review. Additional information about this activity is included in *GPG (NSF 03-2)* or can be obtained from NSF Program Officers.

Table 1: ISE Grant Categories

Grant Category	Project Characteristics	Preliminary Proposal Required	Full Proposal Deadlines	Additional Information
Full Proposals	Supports a broad menu of informal learning activities, including films, television and radio programs, exhibits, after-school programs, family learning activities, Web-based learning activities and other independent, life-long learning activities. Panel and ad-hoc reviews.	Yes. Due Date: No later than March 3 and August 15, 2003	Deadline Date: May 30 and Nov 17, 2003	
Planning Grants	Supports the planning phases of a project regardless of the size of the final project. Ad hoc reviews.	Not required, but contact Program Officer before submitting.	Submit at any time.	
Conference, Symposia, and Workshops	Activities that bring experts together to discuss current issues in informal science education. Program Officer review and ad-hoc reviews, as necessary.	Not required, but contact Program Officer before submitting.	Submit at any time.	See GPG, Chapter II, Section D.7
Small Grants for Exploratory Research (SGER)	Small-scale, exploratory, high-risk research projects in informal learning. Investigators are encouraged to contact an ISE Program Officer before submitting the proposal. Program Officer review	Not required, but contact Program Officer before submitting.	Submit at any time.	See GPG, Chapter II, Section D.1

Proposers are reminded to identify the program announcement/solicitation number (03-511) in the program announcement/solicitation block on the proposal Cover Sheet. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.

B. Budgetary Information

Cost Sharing:

Cost sharing is not required in proposals submitted under this Program Solicitation.

C. Due Dates

Proposals must be submitted by the following date(s):

Preliminary Proposals *(required):*

    March 03, 2003

    August 15, 2003

Full Proposal Deadline(s) (due by 5 p.m. proposer's local time):

    May 30, 2003

    November 17, 2003

Proposals for Planning Grants, Conference Grants, and Small Grants for Exploratory Research (SGER), may be submittted at any time.

D. FastLane Requirements

Proposers are required to prepare and submit all proposals for this announcement/solicitation through the FastLane system. Detailed instructions for proposal preparation and submission via FastLane are available at: http://www.fastlane.nsf.gov/a1/newstan.htm. For FastLane user support, call the FastLane Help Desk at 1-800-673-6188 or e-mail fastlane@nsf.gov. The FastLane Help Desk answers general technical questions related to the use of the FastLane system. Specific questions related to this program announcement/solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this announcement/solicitation.

Submission of Electronically Signed Cover Sheets. The Authorized Organizational Representative (AOR) must electronically sign the proposal Cover Sheet to submit the required proposal certifications (see Chapter II, Section C of the Grant Proposal Guide for a listing of the certifications). The AOR must provide the required electronic certifications within five working days following the electronic submission of the proposal. Proposers are no longer required to provide a paper copy of the signed Proposal Cover Sheet to NSF. Further instructions regarding this process are available on the FastLane Website at: http://www.fastlane.nsf.gov

VI. PROPOSAL REVIEW INFORMATION

A. NSF Proposal Review Process

Reviews of proposals submitted to NSF are solicited from peers with expertise in the substantive area of the proposed research or education project. These reviewers are selected by Program Officers charged with the oversight of the review process. NSF invites the proposer to suggest, at the time of submission, the names of appropriate or inappropriate reviewers. Care is taken to ensure that reviewers have no conflicts with the proposer. Special efforts are made to recruit reviewers from non-academic institutions, minority-serving institutions, or adjacent disciplines to that principally addressed in the proposal.

The National Science Board approved revised criteria for evaluating proposals at its meeting on March 28, 1997 (NSB 97-72). All NSF proposals are evaluated through use of the two merit review criteria. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

On July 8, 2002, the NSF Director issued Important Notice 127, Implementation of new Grant Proposal Guide Requirements Related to the Broader Impacts Criterion. This Important Notice reinforces the importance of addressing both criteria in the preparation and review of all proposals submitted to NSF. NSF continues to strengthen its internal processes to ensure that both of the merit review criteria are addressed when making funding decisions.

In an effort to increase compliance with these requirements, the January 2002 issuance of the GPG incorporated revised proposal preparation guidelines relating to the development of the Project Summary and Project Description. Chapter II of the GPG specifies that Principal Investigators (PIs) must address both merit review criteria in separate statements within the one-page Project Summary. This chapter also reiterates that broader impacts resulting from the proposed project must be addressed in the Project Description and described as an integral part of the narrative.

Effective October 1, 2002, NSF will return without review proposals that do not separately address both merit review criteria within the Project Summary. It is believed that these changes to NSF proposal preparation and processing guidelines will more clearly articulate the importance of broader impacts to NSF-funded projects.

The two National Science Board approved merit review criteria are listed below (see the Grant Proposal Guide Chapter III.A for further information). The criteria include considerations that help define them. These considerations are suggestions and not all will apply to any given proposal. While proposers must address both merit review criteria, reviewers will be asked to address only those considerations that are relevant to the proposal being considered and for which he/she is qualified to make judgments.

What is the intellectual merit of the proposed activity?
How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of the prior work.) To what extent does the proposed activity suggest and explore creative and original concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

What are the broader impacts of the proposed activity?
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?

NSF staff will give careful consideration to the following in making funding decisions:

Integration of Research and Education
One of the principal strategies in support of NSF's goals is to foster integration of research and education through the programs, projects, and activities it supports at academic and research institutions. These institutions provide abundant opportunities where individuals may concurrently assume responsibilities as researchers, educators, and students and where all can engage in joint efforts that infuse education with the excitement of discovery and enrich research through the diversity of learning perspectives.

Integrating Diversity into NSF Programs, Projects, and Activities
Broadening opportunities and enabling the participation of all citizens -- women and men, underrepresented minorities, and persons with disabilities -- is essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

Additional Review Criteria:

In addition to the above consideration, specific criteria used in evaluating ISE proposals include:

- **Impact.** What is the potential for the project to make a significant impact in addressing a major national or regional problem? What is the potential for the project to significantly strengthen the nation's literacy and education in STEM? Is there a particularly creative approach that might serve as a model for others?

- **Plan**. What is the likelihood that the project will achieve results, is cost effective, and is appropriate relative to needs and anticipated impact? Does the project have a sound approach with respect to disciplinary content and/or instructional methods? Is the project aligned or integrated with other major efforts to improve the quality of STEM education? Is the evaluation plan reasonable and does the summative evaluation relate to the goals and intended outcomes of the project? Where applicable, is there a credible plan for project continuation beyond NSF support? Is a credible plan in place for the dissemination of instructional materials, models, or other results to project participants and to the field?

- **Personnel.** What is the expertise and background of senior personnel that will ensure success of the project? Are there assurances that senior personnel have a level of commitment and involvement commensurate with their anticipated contribution?

- **Products.** Is there a clear description of expected products or outcomes of the project and the likelihood that they will be of high quality? Is there a likelihood that the impact of the project will be broadened through dissemination or replication of products or outcomes in other locations or nationally?

- **Cooperative Relationships.** Are there reasonable working relationships among collaborating parties and is evidence of the level of collaboration demonstrated in the proposal? Is there likelihood that the project will facilitate greater interactions among professionals in museums, media, cooperating school systems, universities, and/or industry? Is there evidence that long-term relationships are likely to be forged that can supplement and support the quality of STEM education?

- **Evaluation Plans.** Are there appropriate evaluation plans to assure that (1) draft material and prototype activities will be tested during the development stages of the project, and (2) assessment will be conducted on the impact of the completed project on participants' knowledge, attitudes, interests, and/or behavior?

- **Contributions.** Is there evidence that the proposal includes appropriate contributions (intellectual and/or other resources) from the host institution, private sector, state or local educational agencies, colleges and universities, professional societies, and/or other sources?

A summary rating and accompanying narrative will be completed and submitted by each reviewer. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the identities of reviewers, are accessible to the Principal Investigator (PI) in FastLane upon notification by NSF of award determination.

B. Review Protocol and Associated Customer Service Standard

All proposals are carefully reviewed by at least three other persons outside NSF who are experts in the particular field represented by the proposal. Proposals submitted in response to this announcement/solicitation will be reviewed by Ad Hoc and/or panel review.

Reviewers will be asked to formulate a recommendation to either support or decline each proposal. The Program Officer assigned to manage the proposal's review will consider the advice of reviewers and will formulate a recommendation.

A summary rating and accompanying narrative will be completed and submitted by each reviewer. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the names of the reviewers, are sent to the Principal Investigator/Project Director by the Program Director. In addition, the proposer will receive an explanation of the decision to award or decline funding.

NSF is striving to be able to tell applicants whether their proposals have been declined or recommended for funding within six months. The time interval begins on the date of receipt. The interval ends when the Division Director accepts the Program Officer's recommendation.

In all cases, after programmatic approval has been obtained, the proposals recommended for funding will be forwarded to the Division of Grants and Agreements for review of business, financial, and policy implications and the processing and issuance of a grant or other agreement. Proposers are cautioned that only a Grants and Agreements Officer may make commitments, obligations or awards on behalf of NSF or authorize the expenditure of funds. No commitment on the part of NSF should be inferred from technical or budgetary discussions with a NSF Program Officer. A Principal Investigator or organization that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by the NSF Grants and Agreements Officer does so at their own risk.

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

Notification of the award is made to *the submitting organization* by a Grants Officer in the Division of Grants and Agreements. Organizations whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program Division administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided automatically to the Principal Investigator. (See section VI.A. for additional information on the review process.)

B. Award Conditions

An NSF award consists of: (1) the award letter, which includes any special provisions applicable to the award and any numbered amendments thereto; (2) the budget, which indicates the amounts, by categories of expense, on which NSF has based its support (or otherwise communicates any specific approvals or disapprovals of proposed expenditures); (3) the proposal referenced in the award letter; (4) the applicable award conditions, such as Grant General Conditions (NSF-GC-1); * or Federal Demonstration Partnership (FDP) Terms and Conditions * and (5) any announcement or other NSF issuance that may be incorporated by reference in the award letter. Cooperative agreement awards also are administered in accordance with NSF Cooperative Agreement Terms and Conditions (CA-1). Electronic mail notification is the preferred way to transmit NSF awards to organizations that have electronic mail capabilities and have requested such notification from the Division of Grants and Agreements.

*These documents may be accessed electronically on NSF's Website at http://www.nsf.gov/home/grants/grants_gac.htm. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from pubs@nsf.gov.

More comprehensive information on NSF Award Conditions is contained in the NSF *Grant Policy Manual* (GPM) Chapter II, available electronically on the NSF Website at http://www.nsf.gov/cgi-bin/getpub?gpm. The GPM is also for sale through the Superintendent of Documents, Government Printing Office (GPO), Washington, DC 20402. The telephone number at GPO for subscription information is (202) 512-1800. The GPM may be ordered through the GPO Website at http://www.gpo.gov.

C. Reporting Requirements

For all multi-year grants (including both standard and continuing grants), the PI must submit an annual project report to the cognizant Program Officer at least 90 days before the end of the current budget period.

In addition to the standard reporting requirements, PIs will be required to submit regular information regarding the status of their project. This will include information about participants, activities undertaken, leveraged funding, and project outcomes. ISE is in the process of developing a data-collection system. PIs may be required to submit additional reports using this system.

Annual Reports

These should highlight major accomplishments, describe the lessons learned, document alignment with the proposed time line, and describe the status of the development of the materials. Samples of completed materials, or drafts of materials, should be included.

Site Visitor

The PI and the NSF Program Officer may agree on a site visitor who reviews the progress of the project and its evaluation annually and reports to both the PI and the NSF Program Officer.

Final Reports

Within 90 days after the expiration of an award, the PI also is required to submit a final project report. Failure to provide final technical reports delays NSF review and processing of pending proposals for the PI and all Co-PIs. PIs should examine the formats of the required reports in advance to assure availability of required data.

PIs are required to use NSF's electronic project reporting system, available through FastLane, for preparation and submission of annual and final project reports. This system permits electronic submission and updating of project reports, including information on project participants (individual and organizational), activities and findings, publications, and other specific products and contributions. PIs will not be required to re-enter information previously provided, either with a proposal or in earlier updates using the electronic system.

VIII. CONTACTS FOR ADDITIONAL INFORMATION

General inquiries regarding this program should be made to:

- Barry Van Deman, Section Head [exhibits and museum projects], Directorate for Education & Human Resources, Division of Elementary, Secondary, & Informal Education, 885 S, telephone: (703) 292-5124, fax: (703) 292-9044, email: bvandema@nsf.gov

- Hyman H. Field, Program Director [media projects], Directorate for Education & Human Resources, 885 S, telephone: (703) 292-5333, fax: (703) 292-9044, email: hfield@nsf.gov

- Julie I. Johnson, Program Director, [youth & community programs], Directorate for Education & Human Resources, Division of Elementary, Secondary, & Informal Education, 885 S, telephone: (703) 292-5117, fax: (703) 292-9044, email: jjohnson@nsf.gov

- Valentine H. Kass, Program Director [media projects], Directorate for Education & Human Resources, Division of Elementary, Secondary, & Informal Education, 885 S, telephone: (703) 292-5095, fax: (703) 292-9044, email: vkass@nsf.gov

- Orrin Shane, Program Director [exhibits and museum projects], Directorate for Education & Human Resources, Division of Elementary, Secondary, & Informal Education, 885 S, telephone: (703) 292-5106, fax: (703) 292-9044, email: oshane@nsf.gov

- David A. Ucko, Program Director, [exhibits and Internet programs], Directorate for Education & Human Resources, Division of Elementary, Secondary, & Informal Education, 885 S, telephone: (703) 292-5126, fax: (703) 292-9044, email: ducko@nsf.gov

This document replaces the ISE portion of the ESIE solicitation NSF 01-60.

For questions related to the use of FastLane, contact:

- ESIE FastLane Contact, telephone: (703) 292-8620, email: ehr-esie.info@nsf.gov

IX. OTHER PROGRAMS OF INTEREST

The NSF *Guide to Programs* is a compilation of funding for research and education in science, mathematics, and engineering. The NSF *Guide to Programs* is available electronically at http://www.nsf.gov/cgi-bin/getpub?gp. General descriptions of NSF programs, research areas, and eligibility information for proposal submission are provided in each chapter.

Many NSF programs offer announcements or solicitations concerning specific proposal requirements. To obtain additional information about these requirements, contact the appropriate NSF program offices. Any changes in NSF's fiscal year programs occurring after press time for the *Guide to Programs* will be announced in the NSF E-Bulletin, which is updated daily on the NSF Website at http://www.nsf.gov/home/ebulletin, and in individual program announcements/solicitations. Subscribers can also sign up for NSF's Custom News Service (http://www.nsf.gov/home/cns/start.htm) to be notified of new funding opportunities that become available.

Communicating Research to Public Audiences -- Program Solicitation [NSF 03-509 (http://www.nsf.gov/cgi-bin/getpub?nsf03509)

Teacher Enhancement Program -- Elementary, Secondary, and Informal Education: Program Solicitation and Guidelines [NSF 01-60] (http://www.nsf.gov/cgi-bin/getpub?nsf0160).

Instructional Materials Development -- Program Solicitation [NSF-02-067] (http://www.nsf.gov/cgi-bin/getpub?nsf02067).

Information Technology Experiences for Students and Teachers (ITEST) -- Program Solicitation [NSF-02-147] (http://www.nsf.gov/cgi-bin/getpub?nsf02147).

Presidential Awards for Excellence in Mathematics and Science Teaching -- (http://www.ehr.nsf.gov/pres_awards/).

Advanced Technological Education (ATE) -- Program Solicitation [NSF 02-035] (http://www.nsf.gov/cgi-bin/getpub?nsf02035).

Centers for Learning & Teaching (CLT) -- Program Solicitation [NSF 02-038] (http://www.nsf.gov/cgi-bin/getpub?nsf02038).

Please check the ESIE Web site, http://www.ehr.nsf.gov/esie, for updates to these and other guidelines and solicitations.

Other Programs that may be of interest to proposers to ISE include:

Program for Gender Equity in Science, Mathematics and Technology (PGE) -- Developing interest, knowledge, and involvement of girls and young women in STEM. (http://www.nsf.gov/pubs/2001/nsf01130/nsf01130.htm).

Interagency Education Research Initiative (IERI) -- Supports the establishment of a strong research base for education and learning, particularly in investigating scaling-up of proven interventions and the role of instructional technologies. IERI is a joint research activity between the NSF, the National Institute of Child Health and Development of NIH, and the Department of Education. (http://www.nsf.gov/cgi-bin/getpub?nsf0192).

Math and Science Partnership (MSP) -- Addresses the goal of increasing and sustaining the number, quality, and diversity of preK-12 teachers of mathematics and science through development of a professional education continuum that spans pre-service through career long professional growth. (http://www.nsf.gov/pubs/2002/nsf02190/nsf02190.htm).

National Science, Mathematics, Engineering, and Technology Education Digital Library (NSDL) -- online networks of learning environments and resources for STEM education at all levels.(http://www.ehr.nsf.gov/EHR/DUE/programs/nsdl/).

Research on Learning and Education (ROLE) -- Research in four areas: (1) brain research as a foundation for research on human learning; (2) fundamental research on behavioral, cognitive, affective, and social aspects of human learning; (3) research on STEM learning in formal and informal educational settings; and, (4) research on STEM learning in complex educational systems. (http://www.ehr.nsf.gov/EHR/REC/).

Geoscience Education -- Program Solicitation [NSF 00-38] (http://www.nsf.gov/cgi-bin/getpub?nsf0038.).

Programs for People with Disabilities: Activities in Science, Engineering, and Mathematics for Persons with Disabilities -- Program Solicitation [NSF 02-177] (http://www.nsf.gov/cgi-bin/getpub?nsf02177).

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