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Research on Learning and Education (ROLE)

Program Solicitation

NSF 02-023

DIRECTORATE FOR EDUCATION AND HUMAN RESOURCES
DIVISION OF RESEARCH, EVALUATION AND COMMUNICATION

PRELIMINARY PROPOSAL DUE DATES(S) (*required*): March 15, 2002, September 1, 2002

FULL PROPOSAL DEADLINE(S): June 10, 2002, December 1, 2002

NATIONAL SCIENCE FOUNDATION

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SUMMARY OF PROGRAM REQUIREMENTS

GENERAL INFORMATION

Program Title: Research on Learning and Education (ROLE)

Synopsis of Program: This program seeks to capitalize on important developments in a variety of fields related to human learning and to education. It will support research along a four-quadrant continuum that includes 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 science, technology, engineering and mathematics (STEM) learning in formal and informal educational settings; and 4) research on STEM learning in complex educational systems. ROLE seeks gains at the intersections of these areas, where issues arising from research and educational practice can be reconciled, and hypotheses generated in one area may be tested and refined in others. The ROLE Program aims to advance the knowledge base in and across these multidisciplinary areas.

Cognizant Program Officer(s):

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

- 47.076 --- Education and Human Resources

ELIGIBILITY INFORMATION

- **Organization Limit:** None
- **PI Eligibility Limit:** None
- **Limit on Number of Proposals:** None

AWARD INFORMATION

- **Anticipated Type of Award:** Standard or Continuing Grant
- **Estimated Number of Awards:** 10-20 awards for each of two competitions per year
- **Anticipated Funding Amount:** Approximately $17 million will be available for new and continuing awards for each competition (two per year), pending the availability of funds.

PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

- **Preliminary Proposals:** Submission of Preliminary Proposals is required. Please see the full program announcement/solicitation for further information.
- **Full Proposals:** Deviations From Standard Preparation Guidelines
    - The program announcement/solicitation contains deviations from the standard Grant Proposal Guide (GPG) proposal preparation guidelines. Please see the full program announcement/solicitation for further information.

B. Budgetary Information

- **Cost Sharing Requirements:** Cost Sharing is not required.
- **Indirect Cost (F&A) Limitations:** None
- **Other Budgetary Limitations:** Not Applicable.

C. Deadline/Target Dates

- **Letters of Intent (*optional*):** None
- **Preliminary Proposals (*required*):** March 15, 2002, September 1, 2002
- **Full Proposal Deadline Date(s):** June 10, 2002, December 1, 2002

D. FastLane Requirements

- **FastLane Submission:** Required
- **FastLane Contact(s):**
    - DeMonica Parks, Program Specialist, EHR/REC, 855, telephone: 703-292-5167, e-mail: dparks@nsf.gov.

PROPOSAL REVIEW INFORMATION

- **Merit Review Criteria:** National Science Board approved criteria apply.

AWARD ADMINISTRATION INFORMATION

- **Award Conditions:** Standard NSF award conditions apply.
- **Reporting Requirements:** Standard NSF reporting requirements apply.

I. INTRODUCTION

Preface: the Context for Research on Learning and Education (ROLE)

Advances in many related fields have transformed research on learning and education in recent years. These advances have contributed to an emerging, multidisciplinary science of learning that bears directly on the educational and research goals of the National Science Foundation (NSF). New opportunities promise to advance educational research and practice, and to improve the level, quality, and accessibility of science, mathematics, engineering, and technology (STEM) education.

With these opportunities in mind, the Directorate for Education and Human Resources (EHR) is broadening the scope of its research program, calibrating the program's development through a continuing process of consultation with researchers and educators and policy-makers. Research on Learning and Education (ROLE) is a transitional program that reflects this ongoing process. It seeks to integrate advances across methodologies and disciplines within a single, stable program. Development of the continuing program has been and will continue to be guided in part by theoretical papers and workshops, Principal Investigator meetings, and discussions in other venues addressing current needs and opportunities. This participatory development process is crucial for maintaining the proper balance between expanding the frontiers of knowledge and creating conditions that ensure sustainable implementation of improved educational practices.

The process will also continue to benefit from the results of earlier research programs that NSF has supported, and major studies such as the 1997 report by the President's Committee of Advisors in Science and Technology, *Report to the President on the Use of Technology to Strengthen K-12 Education in the United States*, and the 1999 National Research Council reports including *How People Learn: Brain, Mind, Experience, and School* and *Knowing What Students Know: The Science and Design of Educational Assessment*.

EHR Responsibilities and Activities

The EHR Directorate has primary responsibility for NSF's efforts to provide national and research-based leadership in STEM education. To reach these goals, the Directorate sponsors programs in the Divisions of Elementary, Secondary, and Informal Education (ESIE), Undergraduate Education (DUE), Graduate Education (DGE), Human Resource Development (HRD), the Experimental Program to Stimulate Competitive Research (EPSCoR), and Educational System Reform (ESR), in addition to the research support EHR primarily provides through the Division of Research, Evaluation, and Communication (REC).

The principal research programs of REC are ROLE, the Interagency Education Research Initiative (IERI) and Faculty Early Career Development (CAREER). The IERI program focuses on large-scale studies and the scaled transfer of research findings to educational practice. IERI will continue as a multi-agency initiative with its own announcement. The CAREER program is a Foundation-wide activity which recognizes and supports the early career-development activities of those teacher-scholars who are most likely to become the academic leaders of the 21st century. For a complete list of EHR programs, consult http://www.ehr.nsf.gov/prog.asp. Consult http://www.nsf.gov/pubs/2000/nsf002/apx_a.htm for a complete list of programs across NSF.

II. PROGRAM DESCRIPTION

The ROLE Program helps advance progress toward the EHR goals through the development and application of new scientific knowledge. Goals for the ROLE Program are:

1. To discover and to describe neural, cognitive, affective, and conceptual learning processes required for life-long STEM learning;

2. To understand how prekindergarten through secondary teacher and post-secondary faculty content knowledge and pedagogy relate to the implementation that innovative and effective curricula, materials, and assessments require;

3. To develop research-based learning tools, pedagogical approaches, and materials that enhance STEM education at all levels;

4. To reevaluate the overall curriculum structure (including selection, ordering, and priorities of topics) to enhance STEM education at all levels;

5. To develop and to refine new education research and evaluation methods;

6. To increase the research capacity of the field, especially the development of new researchers and research-oriented education practitioners;

7. To collect and to analyze data and to use data to inform researchers, decision-makers and the general public;

8. To understand the factors that enhance the full participation of all Americans in the STEM enterprise and the approaches that can increase this participation; and

9. To increase the knowledge of learning, teaching and organizational models that lead to substantial and large-scale improvement in the efficiency, efficacy, and cost-effectiveness of the United States educational system.

ROLE: **Areas of Concentration**
A balanced portfolio to achieve these goals spans what may be viewed as a continuum framework. The purpose of the framework is to help enable the integration of research on learning into its broader educational and social context. The ROLE Program will support research across a four-quadrant science of learning continuum that includes:

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.

Each of these quadrants constitutes a broad research area, with its own distinct characteristics and historical foundations. The section "Sampling of Research Areas That May Be Considered in ROLE Proposals" illustrates some of the research areas that characterize the quadrants in this framework. In addition, the quadrants significantly overlap and inform one another. ROLE seeks gains at the intersections of these areas, where issues arising from research and educational practice can be reconciled, and hypotheses generated in one area may be tested and refined in others. The ROLE Program aims to advance the knowledge base in and across these multidisciplinary areas. EHR therefore expects that, as appropriate, NSF's other directorates may participate in the review of proposals to the ROLE Program.

I. Brain Research as a Foundation for Research on Learning

The effort to understand intelligence and learning, and their relationship to the human brain, is one of the most fundamental and profound journeys of basic science. Converging lines of research have begun to reveal how relatively simple forms of learning affect the brain's structure, activity, and organization, from infant development through adulthood. Cognitive processes _ such as reading a word or analyzing a visual scene _ are beginning to be understood in terms of neural systems. Discoveries of this nature are influencing our understanding of behavior and cognition. Neuroscience investigations at a wide range of spatial and temporal scales can contribute to fundamental understanding of the complex process of human learning.

ROLE will support studies focused on human learning that help frame advances in areas that may include but are not limited to biological neural networks, computational neuroscience, functional imaging, neuroplasticity, and adaptive systems. The goal of workshops, theoretical studies, and empirical studies in these areas will be to help conceptualize long-term trajectories by which multidisciplinary research anchored in the neuroscientific foundations of learning can inform educational practice. An important aspect of these activities and subsequent research funding is to build capacity in neuroscience related to complex learning and education. This includes increasing the number of multidisciplinary investigators who address human learning in their research.

II. Fundamental Research on Behavioral, Cognitive, Affective, and Social Aspects of Learning

The goal of this quadrant is to enhance the multidisciplinary understanding of the foundations of human learning. NSF seeks proposals that formulate compelling and innovative bridges from cognitive science either to brain research (Quadrant I) or to research on learning in educational settings (Quadrant III). ROLE strongly encourages multidiscipline, institutional, and researcher and educator collaborations. A sample of areas of interest includes:

- Modeling of cognitive processes and mapping of models to brain function in the context of human learning;
- Sociological, ethnographic, anthropological, economic, and organizational studies that address the special characteristics of educational environments; and
- Understanding the cognitive and pedagogical implications of new scientific and technological advances.

III. Research on STEM Learning in Educational Settings

Many educational approaches, curriculum materials, and technological tools to mediate the learning process have been developed without the benefit of a strong research foundation. In some instances, this is because the appropriate research does not exist. In other cases, this is because of insufficient exchange of information and knowledge between research, development and implementation communities. This has resulted in a time lag between what is known and what can be implemented, and the retention in educational materials of concepts that have been revised by scientific research (e.g., strict functional dichotomies between the left and right hemispheres of the brain).

A principal expectation for research related to this quadrant is to provide a stronger base to support sustained improvement in science and mathematics educational practice in settings such as classrooms, informal learning sites (including the home), and technological learning environments (e.g. non-academic technological education). Another expectation is to bridge research and educational practice. Such bridges should facilitate principled improvement of educational practice, and direct research efforts toward critical, practice-derived issues.

In particular, ROLE seeks proposals that bridge research on science and mathematics learning with areas of educational practice associated with programs in the EHR Divisions and that include collaborations with investigators funded under such programs. **(ROLE is not an evaluation program; rather, it discourages submission of proposals whose primary purpose is to conduct evaluations of other projects, including activities that EHR Divisions support.)** A catalog of current EHR programs and abstracts of funded awards appear at http://www.ehr.nsf.gov/prog.asp. Additionally, NSF welcomes proposals that formulate compelling and innovative bridges either to fundamental research on human learning (Quadrant II) or to research on science and mathematics learning in complex educational settings (Quadrant IV). Particular attention should be paid to research designs that will produce cumulative, reproducible, sustainable and scalable results and that explore the curricular implications of scientific and technological advances.

IV. Research On STEM Learning in Complex Educational Systems

Few organizational studies have addressed the phenomena that drive successful transformation of educational systems into entities that optimize student learning. The development of theoretical frameworks, analytical tools, and deeper empirical understanding of these phenomena is essential to the advancement of educational policies and large-scale strategies to improve learning.

The term "systems" refers to traditional entities (e.g. pre-K-12 school systems, post-secondary organizations and authorities), and to broader views of educational stakeholders, including research scientists, and policy makers, and the ways in which stakeholders interact.

ROLE welcomes proposals that study existing large-scale reform experiments, in which foundational research on human learning or research in components of STEM educational practice are embedded in a sustainable and scalable way in actual complex systems of practice. Such systemic studies may include uncovering the mechanisms for the transfer of fundamental research findings in scientific disciplines to innovation-based curriculum reform, the adoption of experimental STEM learning technology prototypes into scaled and sustained educational practice, or the conditions for widespread increases of the participation of learners in scientific research. Other questions for which research findings are sought include core issues in systemic reform at all levels of education, and systemic reform issues that require better theoretical specification than is currently available. Eligible research includes studies that involve testable hypotheses, studies that challenge current systemic reform strategies, design experiments, and other research methods such as quasi-experiments, testbeds, longitudinal data, and national and international comparisons.

A sample of research areas of potential interest includes:

- Studies of systemic reform strategies, including predictive modeling, frameworks for systemic change, and evaluations of costs and effectiveness;
- Innovation flow and organizational mechanisms conducive to policy changes and sustained, coherent improvements in systemwide practice;
- Interactions among accountability reforms, curricular reforms, textbook adoptions, technologies, teacher professional development opportunities, revised graduation requirements, schedules, and other reforms;
- Modeling of large educational systems and their evolution in terms of multilevel adaptive systems, with possible theoretical parallels to issues and research in the first three Quadrants.

Common Themes Across the ROLE Concentration Areas

Balance: The Foundation expects to support a balance of proposals across the four concentration areas. It also expects to support a balance of **innovation in methodology** with the use of **mature or maturing methodologies** and a balance in the development of **new technology** with **mature or maturing technologies**.

Methodology: The development of appropriate research methodologies is, in itself, a significant product of EHR-funded research. Therefore, competitive proposals must take special care to keep abreast of relevant advances in research methodologies and theoretical models. Rapid transitions from hypothesis generation to hypothesis testing are appropriate. The ROLE Program seeks proposals that capitalize on the development of new instrumental, computational or statistical methods, models, and tools of observation and analysis. Such development enhances qualitative and quantitative methods available to build **rigorous, cumulative, reproducible, and usable** findings across ROLE's four areas of concentration.

Technology: ROLE seeks research proposals that advance our understanding of how a broad range of technology can enhance learning or help create more effective and efficient educational systems. ROLE recognizes that in order to study the effects of emerging and existing technology, developmental efforts are necessary. However the development activities must be part of a clear research proposal.

Research Transfer: ROLE seeks to accelerate the integration of high-quality research findings into STEM educational practice. Proposals that determine the character, limitations and potential of the use and adoption of research findings are eligible. As the body of well-grounded, reproducible, cumulative and usable findings emerges, proposers should consider what mechanisms efficiently bring those findings into productive public or scholarly debate and educational practice.

Human Capacity Development: ROLE seeks proposals that help to stimulate the quality and preparation of the STEM educational research and practice communities. Such projects may help promote the efficacy of mechanisms for recruiting, training, and supporting beginning researchers (including graduate students, faculty in early career stages, and crossover researchers from the academic sciences to industry or from industry to education). Requests for travel awards, preparation of critical literature reviews, and workshops to develop collaborations and to communicate results among the appropriate constituencies that contribute to the educational base should be discussed with a ROLE Program Officer prior to submission.

Finally, the Foundation recognizes the need for ROLE to serve as an opportunity for exceptional or unanticipated approaches based upon specific EHR goals or needs. *EHR welcomes high-risk proposals that demonstrate a compelling potential to advance the goals of the Directorate and the Foundation.*

Resources for ROLE Applicants

The REC Division maintains a website that provides selected resources for prospective ROLE applicants such as:

- A collection of successful ROLE proposals;
- A sampling of research areas that may be considered in ROLE proposals;
- An advisory on general observations of weaknesses in declined ROLE proposals; and
- An unofficial list of previous ROLE awards, including, where appropriate, quadrant or content area.

The location http://www.ehr.nsf.gov/rec/programs/research will link browsers to these resources.

III. ELIGIBILITY INFORMATION

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

IV. AWARD INFORMATION

ROLE awards may be funded as standard or continuing grants up to 3 years and will generally range from $100,000 to $1,800,000. Depending on the availability of funding, between 10 and 20 proposals may be selected for support in each of the two annual funding cycles. ROLE will consider planning, workshop and exploratory research grants for up to one year and up to $100,000 each. No predetermined allocation for funding applies across the four concentration areas of the ROLE continuum.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Preliminary Proposals:

Preliminary proposals are required prior to submission of full proposals on or before the preliminary proposal deadline date. (Note: Full ROLE proposals that have been declined may be revised and resubmitted within two deadline cycles of declination without further preliminary proposal submission. Similarly, a formal proposal may be submitted within two deadline cycles of the submission of the underlying preliminary proposal deadline.) Preliminary proposals should include the following:

1. A Cover Sheet (NSF Form 1207); the Project Title should begin with the preface "ROLE Preproposal:"; the dollar request field should remain blank.
2. A Project Summary Form that provides a brief synopsis of the proposed project and that specifies the Quadrant(s) to which the proposal responds.
3. A Project Description of five to seven pages; the Project Description describes the essential features and anticipated impact of the proposal. In particular, proposers should:

- Describe the research issue(s) proposed, the proposed methods of investigation, and the guiding, relevant theoretical frameworks;
- Describe the strategic contribution of the research to NSF's education goals and specific research goals;
- Identify the project team of scholars, learners, teachers, faculty and scientists;
- Describe the advanced technologies, if any, that will be developed or that the project will use;
- Outline the conjectures or hypotheses that are to be tested, the proof-of-concept evidence that will be gathered, and the anticipated impact on different learner populations; and
- Provide on the final page of the Project Description a summary of estimated project costs.

4. Provide brief biographical sketches (not to exceed one page each) for key project personnel.

Preliminary proposals that omit Project Descriptions or that simply recapitulate a Project Summary page do not satisfy preliminary proposal requirements under ROLE.

No other forms should be submitted for preliminary proposals. Signed and separately mailed cover sheets are not required for preliminary proposals. NSF program staff members review preliminary proposals; where appropriate, the review will include staff from other NSF divisions or external experts. Review of preliminary proposals, and communication back to the proposer, may take as long as seven weeks. The preliminary proposal review is not a factor in the review of a subsequent full proposal. NSF typically returns funding decisions within six months of formal proposal submission.

Full Proposal:

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 Web Site at: http://www.nsf.gov/cgi-bin/getpub?gpg. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (301) 947-2722 or by e-mail from pubs@nsf.gov.

Special Notice on Small Grants For Exploratory Research (SGER)

Proposers interested in submitting projects for under $100,000 and whose goals are either organizing meetings or workshops, increasing the research capacity in the field, or exploring high-risk, high-gain ideas, may submit proposals under this Announcement. REC will also consider unsolicited proposals for Small Grants for Exploratory Research (SGER). Details for SGER grant proposals, which may be submitted at any time, appear in the *Grant Proposal Guidelines (NSF 01-02).* Individuals interested in submitting a SGER proposal should discuss their ideas with a ROLE Program Officer prior to submission.

Proposers are reminded to identify the program solicitation number (NSF 02-023) in the program announcement/solicitation block on the proposal Cover Sheet (NSF Form 1207). 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 is not required in proposals submitted under this Program Solicitation.

Indirect Cost (F&A) Limitations: None

C. Deadline/Target Dates

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

Preliminary Proposals (*required*): March 15, 2002, September 1, 2002
Full Proposals *by 5:00 PM local time*: June 10, 2002, December 1, 2002

D. FastLane Requirements

Proposers are required to prepare and submit all proposals for this Program 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 1-800-673-6188 or e-mail fastlane@nsf.gov.

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 certifications within five working days following the electronic submission of the proposal. 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.

Proposals will be reviewed against the following general review criteria established by the National Science Board. Following each criterion are potential considerations that the reviewer may employ in the evaluation. These are suggestions and not all will apply to any given proposal. Proposers are reminded that both the intellectual merit and the broader impacts of the work to be accomplished should be addressed. While reviewers are expected to address both merit review criteria, each reviewer will be asked to address only considerations that are relevant to the proposal and for which he/she is qualified to make judgements.

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?

Principal Investigators should address the following elements in their proposal to provide reviewers with the information necessary to respond fully to both of the above-described NSF merit review criteria. NSF staff will give these elements careful consideration 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.

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.

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 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.

NSF is striving to be able to tell applicants whether their proposals have been declined or recommended for funding within six months for 70 percent of proposals. 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 its 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 Web site at http://www.nsf.gov/home/grants/grants_gac.htm. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (301) 947-2722 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 Web site 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 Web site 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.

Within 90 days after the expiration of an award, the PI also is required to submit a final project report. Approximately 30 days before expiration, NSF will send a notice to remind the PI of the requirement to file the final project report. Failure to provide final technical reports delays NSF review and processing of pending proposals for that PI. PIs should examine the formats of the required reports in advance to assure availability of required data.

NSF has implemented an electronic project reporting system, available through FastLane. 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 Research on Learning and Education should be made to:

- James Dietz, telephone: 703-292-5156, e-mail: jdietz@nsf.gov.
- Walter Ermler, telephone: 703-292-5161, e-mail: wermler@nsf.gov.
- Michael Martinez, telephone: 703-292-4614, e-mail: mmartine@nsf.gov.
- Finbarr Sloane, telephone: 703-292-5146, e-mail: fsloane@nsf.gov.
- Larry Suter, telephone: 703-292-5144, e-mail: lsuter@nsf.gov.
- Elizabeth VanderPutten, telephone: 703-292-5147, e-mail: evanderp@nsf.gov.
- Kenneth Whang, telephone: 703-292-5149, e-mail: kwhang@nsf.gov.
- Lee Zia, telephone: 703-292-5140, e-mail: lzia@nsf.gov.

For questions related to the use of FastLane, contact:

- DeMonica Parks, Program Specialist, EHR/REC, 855, telephone: 703-292-5167, e-mail: dparks@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 web site 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.

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