Transforming STEM Learning (TSL)

PROGRAM SOLICITATION
NSF 10-602

National Science Foundation

Directorate for Education & Human Resources
Research on Learning in Formal and Informal Settings

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

March 11, 2011

March 09, 2012

IMPORTANT INFORMATION AND REVISION NOTES

A revised version of the *NSF Proposal & Award Policies & Procedures Guide* (PAPPG), NSF 11-1, was issued on October 1, 2010 and is effective for proposals submitted, or due, on or after January 18, 2011. Please be advised that the guidelines contained in NSF 11-1 apply to proposals submitted in response to this funding opportunity. Proposers who opt to submit prior to January 18, 2011, must also follow the guidelines contained in NSF 11-1.

Cost Sharing: The PAPPG has been revised to implement the National Science Board's recommendations regarding cost sharing. Inclusion of voluntary committed cost sharing is prohibited. In order to assess the scope of the project, all organizational resources necessary for the project must be described in the Facilities, Equipment and Other Resources section of the proposal. The description should be narrative in nature and must not include any quantifiable financial information. Mandatory cost sharing will only be required when explicitly authorized by the NSF Director. See the PAPP Guide Part I: *Grant Proposal Guide (GPG)* Chapter II.C.2.g(xi) for further information about the implementation of these recommendations.

Data Management Plan: The PAPPG contains a clarification of NSF's long standing data policy. All proposals must describe plans for data management and sharing of the products of research, or assert the absence of the need for such plans. FastLane will not permit submission of a proposal that is missing a Data Management Plan. The Data Management Plan will be reviewed as part of the intellectual merit or broader impacts of the proposal, or both, as appropriate. Links to data management requirements and plans relevant to specific Directorates, Offices, Divisions, Programs, or other NSF units are available on the NSF website at: http://www.nsf.gov/bfa/dias/policy/dmp.jsp. See Chapter II.C.2.j of the GPG for further information about the implementation of this requirement.

Postdoctoral Researcher Mentoring Plan: As a reminder, each proposal that requests funding to support postdoctoral researchers must include, as a supplementary document, a description of the mentoring activities that will be provided for such individuals. Please be advised that if required, FastLane will not permit submission of a proposal that is missing a Postdoctoral Researcher Mentoring Plan. See Chapter II.C.2.j of the GPG for further information about the implementation of this requirement.

SUMMARY OF PROGRAM REQUIREMENTS

General Information

Program Title:

Transforming STEM Learning (TSL)

Synopsis of Program:

TSL combines interests and resources of separate programs in the Division of Research on Learning in Formal and Informal Settings (DRL) to explore the opportunities and challenges implied by innovative visions of the future for STEM learning. The TSL program invites interdisciplinary teams of STEM content specialists, experts in relevant technologies, STEM formal and informal education specialists, researchers with expertise in the learning sciences, and specialists in education research and evaluation methods to submit proposals for research projects that (1) Study efficacy of existing prototypes for innovations like virtual schools, special STEM schools, and educational programs that combine opportunities of formal and informal learning resources in their communities; or (2) Design and conduct exploratory development of new potentially transformative models for STEM learning environments. The cross-cutting proposals will draw from work in the four primary DRL programs: Discovery Research K-12 (DR K-12), Informal Science Education (ISE), Research and Evaluation on Education in Science and Engineering (REESE), and Innovative Technology Experiences for Students and Teachers (ITEST). However, proposals submitted in response to this solicitation must have a scope that extends well beyond any of those programs individually.

Cognizant Program Officer(s):

- Inquiries can be made to, telephone: 703-292-5101, email: DRLTSL@nsf.gov

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

- 47.076 --- Education and Human Resources

Award Information

Anticipated Type of Award: Continuing grant for research projects; standard grant for planning projects

Estimated Number of Awards: 15 A total of about 5 large research projects and 10 planning and pilot development projects over the two competition years

Anticipated Funding Amount: $5,000,000 In FY 2011 and FY 2012, up to $5,000,000 will be allocated to funding projects under this solicitation, subject to availability of funds. Research projects may ask for up to $2,000,000 for project duration of up to 4 years; planning and pilot development projects may ask for up to $500,000 for project duration up to 2 years.

Eligibility Information

Organization Limit:

None Specified

PI Limit:

None Specified

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI:

None Specified

Proposal Preparation and Submission Instructions

A. Proposal Preparation Instructions

- **Letters of Intent:** Not Applicable
- **Preliminary Proposal Submission:** Not Applicable
- **Full Proposals:**
  - Full Proposals submitted via FastLane: NSF Proposal and Award Policies and Procedures Guide, Part I: Grant Proposal Guide (GPG) Guidelines apply. The complete text of the GPG is available electronically on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg.
  - Full Proposals submitted via Grants.gov: NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov Guidelines apply (Note: The NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide)

B. Budgetary Information

- **Cost Sharing Requirements:** Inclusion of voluntary committed cost sharing is prohibited.
- **Indirect Cost (F&A) Limitations:** Not Applicable
- **Other Budgetary Limitations:** Not Applicable

C. Due Dates

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

  March 11, 2011

  March 09, 2012

Proposal Review Information Criteria

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.

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I. INTRODUCTION

Providing high quality STEM learning opportunities for all Americans continues to be a critical challenge. A STEM-literate public is needed to fully understand and participate in discourse on issues affecting the nation, and there is an expanding need for a diverse workforce knowledgeable in science, technology, engineering, and mathematics (STEM) and capable of innovation. Fortunately, significant resources can help address that challenge.

Networked computing and communications technologies offer access to vast stores of information and impressive new learning tools anywhere and anytime. The science-rich organizations and information media in our communities provide engaging settings for STEM learning outside of school. Research in education, the learning sciences, and informal learning has expanded our knowledge and suggested ways to design new kinds of learning environments. These resources for formal and informal STEM education have the potential to change radically what, how, and when people learn and the ways in which learning is assessed and validated.

If our nation is to respond appropriately to these opportunities for more effective STEM teaching and learning, key research and development issues must be addressed. Innovative ideas must be transformed into working models of STEM learning environments, and the impact of those models on learning and teaching must be studied carefully.

II. PROGRAM DESCRIPTION

By virtue of its broad portfolio of research and development in STEM education, the Division of Research on Learning in Formal and Informal Settings (DRL) is uniquely positioned to encourage and support the large-scale projects needed to design, develop, and study truly innovative STEM learning environments. For this reason, DRL seeks cross-cutting proposals that draw from and span its primary programs.

This solicitation invites proposals for work on two special challenges:

Challenge 1: Studying Existing Examples of Innovative Models for STEM Education.

Adventuresome educators are already engaged in a variety of pilot projects to explore the potential of significant restructuring in STEM learning environments-to connect formal and informal learning opportunities, to connect students and STEM professionals, to engage families in STEM education, and to provide new tools for assessing and validating student learning. There are also hundreds of STEM-focused schools across the country, as well as virtual schools that enroll hundreds of thousands of students in their courses. However, claims for success of those efforts remain largely undocumented by empirical studies.

To inform further development and broad implementation of such STEM education initiatives, we invite proposals for descriptive and analytic research projects that will study existing innovations to determine how and what students are learning, the essential features of successful programs, and why various practices are or are not effective. Proposals for work on those objectives should involve interdisciplinary teams, as appropriate, of STEM content specialists, experts in relevant technologies, STEM education specialists, researchers with expertise in the learning sciences, and specialists in education research and evaluation methods. The projects might range from intensive qualitative case studies of particular relevant and interesting educational programs, like special STEM schools or blends of formal and informal STEM learning activities, to extensive quantitative studies that assess student learning in programs like virtual schools.

We expect to fund at least five such projects with grants up to $2,000,000 for work extending up to four years. Proposals for such work should explain clearly the innovative aspects of the setting being studied, the research design and methods to be employed, and the kind of generalizable insights that might be drawn from the work.

Challenge 2: Designing, Developing, and Studying New Structural Models for STEM Learning Environments

Radical change is needed if education is to keep pace with demands of the workplace and effective citizenship. Yet early adopters and cutting-edge research and development have only begun to develop and test the potential of designs that combine the best features of formal and informal learning and the educative resources offered by networked computing, communication, and information technologies. Many approaches have not yet even been attempted. Such bold experiments will challenge traditional patterns of STEM education, and therefore cannot occur easily within current structures for delivery and monitoring of teaching and learning. Thus DRL is also initiating support for a program of research and development initiatives to design, develop, and study entirely new models for learning environments. This program will have two phases, only the first of which is funded under this solicitation.

In a first phase, we invite proposals for planning and pilot development projects from interdisciplinary teams of STEM content specialists, STEM formal and informal education specialists, researchers with expertise in the learning sciences, and specialists in education research and evaluation methods. The aim of these projects would be the development and study of potentially transformative new models for STEM learning environments that produce learners with understandings, skills, habits of mind, and

dispositions to engage in scientific, engineering, technical, and mathematical thinking and practices. They should yield learning outcomes markedly superior to the yield of current practices in STEM education. Proposals may request up to $500,000 for projects up to 2 years in duration. We expect to fund about 10 such projects.

Significant experiments designed to test comprehensive and radical restructuring of STEM education will require longer timelines and greater resources than conventional research and development grants. Thus we envision a future second phase funding program that would provide substantial long-term support for the most promising project proposals that emerge either from the first phase of this initiative, or from similar levels of previous planning prototype testing elsewhere.

In response to Challenge 2, we seek proposals for projects that will produce plans for the extensive work required to design, develop, and study innovations in STEM education with the following characteristics:

- Combine the diverse resources of formal and informal STEM education organizations, the STEM research and development community, and the media that are pervasive in our culture.
- Use networked computing, communication, and information resources to transform and blur boundaries between the formal and informal learning and teaching opportunities provided by schools, community institutions, and families.
- Attend to both the specific content and overarching ideas of STEM disciplines. This includes an essential content core as well as concepts that cross over traditional disciplinary boundaries.
- Facilitate learners' development of STEM habits of mind, the skills to apply STEM thinking broadly and effectively in decision-making, and the dispositions to engage in STEM-related activities and learning practices with others.
- Use findings from contemporary research in the learning sciences to guide the design, development, and testing work.

The separate DRL programs for support of research and development projects in STEM education-Discovery Research K-12, Informal Science Education, Innovative Technology Experiences for Students and Teachers, and Research and Evaluation on Education in Science and Engineering-have always been and continue to be interested in project proposals that focus on specific challenges and opportunities for innovation in STEM learning. However, proposals that address the two special challenges outlined in this solicitation should be addressed to the Division of Research on Learning.

References

The following books and papers might be helpful resources in preparing aspects of proposals in response to the challenges of this solicitation:

American Statistical Association (2007). *Using statistics effectively in mathematics education research.* Retrieved July 9, 2007 from http://www.amstat.org/education/pdfs/UsingStatisticsEffectivelyinMathEdResearch.pdf .

Bell, P., Lewenstein, B., Shouse, A., & Feder, M. (Eds.). (2009). *Learning Science in Informal Environments: People, Places and Pursuits*. Washington, DC: National Academy Press.

Brown, John Seely. *New Learning Environments for the 21st Century*, http://www.johnseelybrown.com/newlearning.pdf

Brown, J.S. & Adler, R.P. (2008). Minds on fire: Open education, the long tail, and learning 2.0. *Educause Review, 43(1).*

Chan, T. W., Roschelle, J., Hsi, S., Kinshuk, Sharples, M., Brown, T., et al. (2006). One-to-one technology-enhanced learning: An opportunity for global research collaboration. *Research and Practice in Technology-Enhanced Learning, 1(1),* 3-29.

Charmaz, K. (2006). Constructing grounded theory: A practical guide through qualitative analysis. Thousand Oaks, CA: Sage.

Clements, D. H. (2007). Curriculum research: Toward a framework for "Research-based curricula". *Journal for Research in Mathematics Education, 38 (1): 35-70.*

Cobb, P., Confrey, J., deSessa, A., Lehrer, R., & Schauble, L. (2003). Design experiments in educational research. Educational Researcher, 32(1), 9 -13.

Collins, A. and Halverson, R. *Rethinking Education in the Age of Technology: The Digital Revolution and Schooling in America*. http://store.tcpress.com/0807750026.shtml

Levin, D and Arafeh, S. (2002). The Digital Disconnect: the Widening Gap Between Internet-Savvy Students and Their Schools. Washington, DC: Pew Internet and American Life Project/AIR.

Moe, T. M. and Chubb, J. F. (2009) *Liberating Learning: Technology, Politics and the Future of American Education*.

National Research Council (2002). *Scientific research in education.* Washington, DC: National Academy Press.

National Research Council (2003). *Assessment in support of instruction and learning: Bridging the gap between large-scale and classroom assessment.* Washington, DC: National Academy Press.

National Research Council (2004). *On evaluating curricular effectiveness: Judging the quality of K-12 mathematics evaluations.* Washington, DC: National Academy Press.

NSF Task Force on Cyberlearning. (2008). *Fostering Learning the Networked World.* National Science Foundation.

Project Tomorrow (2009). *Selected National Findings: Speak Up 2008 for Students, Teachers, Parents & Administrators.* Available at

http://www.tomorrow.org/speakup/pdfs/SU08_findings_final_mar24.pdf

Sawyer, R. Keith, *The Schools of the Future*, (2006). In R.K. Sawyer (Ed.) Cambridge Handbook of the Learning Sciences, 576-580.

Schneider, B., Carnoy, M., Kilpatrick, J., Schmidt, W. H., & Shavelson, R. J. (2007). *Estimating causal effects using experimental and observational designs* (report from the Governing Board of the American Educational Research Association Grants Program). Washington, DC: American Educational Research Association.

Shadish, W., Cook, T., and Campbell, D. (2002). *Experimental and Quasi-Experimental Designs for Generalized Causal Inference*. Boston: Houghton-Mifflin Company.

Squire, K. D. (2007). Games, learning, and society: Building a field. *Educational Technology, 4(5),* 51-54.

The McArthur Foundation. *Living and Learning with New Media.* http://www.macfound.org/atf/cf/%7BB0386CE3-8B29-4162-8098-E466FB856794%7D/DML_ETHNOG_WHITEPAPER.PDF

The National Academies (2005). *Facilitating Interdisciplinary Research*. Washington, DC: National Academy Press.

III. AWARD INFORMATION

Anticipated Type of Award: Continuing grant for research projects; standard grant for planning projects

Estimated Number of Awards: 15 A total of about 5 large research projects and 10 planning and pilot development projects over the two competition years

Anticipated Funding Amount: $5,000,000 In FY 2011 and FY 2012, up to $5,000,000 will be allocated to funding projects under this solicitation, subject to availability of funds. Research projects may ask for up to $2,000,000 for project duration of up to 4 years; planning and pilot development projects may ask for up to $500,000 for project duration up to 2 years.

Estimated program budget, number of awards and average award size/duration are subject to the availability of funds.

IV. ELIGIBILITY INFORMATION

The categories of proposers eligible to submit proposals to the National Science Foundation are identified in the Grant Proposal Guide, Chapter I, Section E.

Organization Limit:

None Specified

PI Limit:

None Specified

Limit on Number of Proposals per Organization:

None Specified

Limit on Number of Proposals per PI:

None Specified

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Full Proposal Preparation Instructions: Proposers may opt to submit proposals in response to this Program Solicitation via Grants.gov or via the NSF FastLane system.

- Full proposals submitted via FastLane: Proposals submitted in response to this program 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/publications/pub_summ.jsp?ods_key=gpg. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from nsfpubs@nsf.gov. Proposers are reminded to identify this program solicitation number in the program solicitation block on the NSF 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.

- Full proposals submitted via Grants.gov: Proposals submitted in response to this program solicitation via Grants.gov should be prepared and submitted in accordance with the NSF Grants.gov Application Guide: A Guide for the Preparation and Submission of NSF Applications via Grants.gov. The complete text of the NSF Grants.gov Application Guide is available on the Grants.gov website and on the NSF website at: (http://www.nsf.gov/publications/pub_summ.jsp?ods_key=grantsgovguide). To obtain copies of the Application Guide and Application Forms Package, click on the Apply tab on the Grants.gov site, then click on the Apply Step 1: Download a Grant Application Package and Application Instructions link and enter the funding opportunity number, (the program solicitation number without the NSF prefix) and press the Download Package button. Paper copies of the Grants.gov Application Guide also may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from nsfpubs@nsf.gov.

In determining which method to utilize in the electronic preparation and submission of the proposal, please note the following:

Collaborative Proposals. All collaborative proposals submitted as separate submissions from multiple organizations must be submitted via the NSF FastLane system. Chapter II, Section D.4 of the Grant Proposal Guide provides additional information on collaborative proposals.

The following information supplements the standard GPG or NSF Grants.gov Application Guide proposal preparation guidelines:

Project Evaluation. Research projects that respond to Challenge 1 must have a plan for both formative and summative evaluations. The relationship of the evaluator/evaluation team and research project team should be sufficiently distant to the project to assure confidence in the objectivity of the evaluation. Although the project research team might conduct the majority of the data gathering, analysis, and interpretation as part of the core work of the project, a skilled outside evaluator would use their work and other data to monitor progress toward the project's goals and objectives. A summary of the external evaluation must be included as part of the PI's annual report to NSF, and the summative evaluation must be part of the PI's final report to NSF.

Projects that focus on gathering evidence about a complex intervention might need to expand the evaluation capacity of the project. Such projects might find it helpful to create an expert advisory board. The advisory board would meet at least annually to discuss the progress of the research effort, serving as a sounding board for important theoretical, methodological, and practical aspects of the study.

B. Budgetary Information

Cost Sharing: Inclusion of voluntary committed cost sharing is prohibited

Budget Preparation Instructions:

The budget should include a request for funds to cover the cost of attendance of the PI at annual awardee meetings in Arlington, VA.

C. Due Dates

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

  March 11, 2011

  March 09, 2012

D. FastLane / Grants.gov Requirements

- **For Proposals Submitted Via FastLane:**

  Detailed technical instructions regarding the technical aspects of preparation and submission via FastLane are available at: https://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 solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this funding opportunity.

  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. Further instructions regarding this process are available on the FastLane Website at: https://www.fastlane.nsf.gov/fastlane.jsp.

- **For Proposals Submitted Via Grants.gov:**

  Before using Grants.gov for the first time, each organization must register to create an institutional profile. Once registered, the applicant's organization can then apply for any federal grant on the Grants.gov website. The Grants.gov's Grant Community User Guide is a comprehensive reference document that provides technical information about Grants.gov. Proposers can download the User Guide as a Microsoft Word document or as a PDF document. The Grants.gov User Guide is available at: http://www.grants.gov/CustomerSupport. In addition, the NSF Grants.gov Application Guide provides additional technical guidance regarding preparation of proposals via Grants.gov. For Grants.gov user support, contact the Grants.gov Contact Center at 1-800-518-4726 or by email: support@grants.gov. The Grants.gov Contact Center answers general technical questions related to the use of Grants.gov. Specific questions related to this program solicitation should be referred to the NSF program staff contact(s) listed in Section VIII of this solicitation.

  Submitting the Proposal: Once all documents have been completed, the Authorized Organizational Representative (AOR) must submit the application to Grants.gov and verify the desired funding opportunity and agency to which the application is submitted. The AOR must then sign and submit the application to Grants.gov. The completed application will be transferred to the NSF FastLane system for further processing.

VI. NSF PROPOSAL PROCESSING AND REVIEW PROCEDURES

Proposals received by NSF are assigned to the appropriate NSF program where they will be reviewed if they meet NSF proposal preparation requirements. All proposals are carefully reviewed by a scientist, engineer, or educator serving as an NSF Program Officer, and usually by three to ten other persons outside NSF who are experts in the particular fields represented by the proposal. These reviewers are selected by Program Officers charged with the oversight of the review process. Proposers are invited to suggest names of persons they believe are especially well qualified to review the proposal and/or persons they would prefer not review the proposal. These suggestions may serve as one source in the reviewer selection process at the Program Officer's discretion. Submission of such names, however, is optional. Care is taken to ensure that reviewers have no conflicts of interest with the proposal.

A. NSF Merit Review Criteria

All NSF proposals are evaluated through use of the two National Science Board (NSB)-approved merit review criteria: intellectual merit and the broader impacts of the proposed effort. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

The two NSB-approved merit review criteria are listed below. 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 the reviewer 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, original, or potentially transformative 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?

Examples illustrating activities likely to demonstrate broader impacts are available electronically on the NSF website at: http://www.nsf.gov/pubs/gpg/broaderimpacts.pdf.

Mentoring activities provided to postdoctoral researchers supported on the project, as described in a one-page supplementary document, will be evaluated under the Broader Impacts criterion.

NSF staff also 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.

B. Review and Selection Process

Proposals submitted in response to this program solicitation will be reviewed by Ad hoc Review 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.

After scientific, technical and programmatic review and consideration of appropriate factors, the NSF Program Officer recommends to the cognizant Division Director whether the proposal should be declined or recommended for award. 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 deadline or target date, or receipt date, whichever is later. The interval ends when the Division Director accepts the Program Officer's 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 Officer. In addition, the proposer will receive an explanation of the decision to award or decline funding.

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 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.B. 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 (GC-1); * or Research Terms and Conditions * and (5) any announcement or other NSF issuance that may be incorporated by reference in the award letter. Cooperative agreements also are administered in accordance with NSF Cooperative Agreement Financial and Administrative Terms and Conditions (CA-FATC) and the applicable Programmatic Terms and Conditions. NSF awards are electronically signed by an NSF Grants and Agreements Officer and transmitted electronically to the organization via e-mail.

*These documents may be accessed electronically on NSF's Website at http://www.nsf.gov/awards/managing/award_conditions.jsp?org=NSF. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (703) 292-7827 or by e-mail from nsfpubs@nsf.gov.

More comprehensive information on NSF Award Conditions and other important information on the administration of NSF awards is contained in the NSF *Award & Administration Guide* (AAG) Chapter II, available electronically on the NSF Website at http://www.nsf.gov/publications/pub_summ.jsp?ods_key=aag.

C. Reporting Requirements

For all multi-year grants (including both standard and continuing grants), the Principal Investigator must submit an annual project report to the cognizant Program Officer at least 90 days before the end of the current budget period. (Some programs or awards require more frequent project reports). Within 90 days after expiration of a grant, the PI also is required to submit a final project report, and a project outcomes report for the general public.

Failure to provide the required annual or final project reports, or the project outcomes report will delay NSF review and processing of any future funding increments as well as any pending proposals for that PI. 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. Such reports provide information on activities and findings, project participants (individual and organizational) 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. Submission of the report via FastLane constitutes certification by the PI that the contents of the report are accurate and complete. The project outcomes report must be prepared and submitted using Research.gov. This report serves as a brief summary, prepared specifically for the public, of the nature and outcomes of the project. This report will be posted on the NSF website exactly as it is submitted by the PI.

VIII. AGENCY CONTACTS

General inquiries regarding this program should be made to:

- Inquiries can be made to, telephone: 703-292-5101, email: DRLTSL@nsf.gov

For questions related to the use of FastLane, contact:

- FastLane Help Desk, telephone: 1-800-673-6188; e-mail: fastlane@nsf.gov.

For questions relating to Grants.gov contact:

- Grants.gov Contact Center: If the Authorized Organizational Representatives (AOR) has not received a confirmation message from Grants.gov within 48 hours of submission of application, please contact via telephone: 1-800-518-4726; e-mail: support@grants.gov.

IX. OTHER INFORMATION

The NSF Website provides the most comprehensive source of information on NSF Directorates (including contact information), programs and funding opportunities. Use of this Website by potential proposers is strongly encouraged. In addition, National Science Foundation Update is a free e-mail subscription service designed to keep potential proposers and other interested parties apprised of new NSF funding opportunities and publications, important changes in proposal and award policies and procedures, and upcoming NSF Regional Grants Conferences. Subscribers are informed through e-mail when new publications are issued that match their identified interests. Users can subscribe to this service by clicking the "Get NSF Updates by Email" link on the NSF web site.

Grants.gov provides an additional electronic capability to search for Federal government-wide grant opportunities. NSF funding opportunities may be accessed via this new mechanism. Further information on Grants.gov may be obtained at http://www.grants.gov.

ABOUT THE NATIONAL SCIENCE FOUNDATION

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The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; and project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants as part of the proposal review process; to proposer institutions/grantees to provide or obtain data regarding the proposal review process, award decisions, or the administration of awards; to government contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies or other entities needing information regarding applicants or nominees as part of a joint application review process, or in order to coordinate programs or policy; and to another Federal agency, court, or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See Systems of Records, NSF-50, "Principal Investigator/Proposal File and Associated Records," 69 Federal Register 26410 (May 12, 2004), and NSF-51, "Reviewer/Proposal File and Associated Records, " 69 Federal Register 26410 (May 12, 2004). Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

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