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# Local Systemic Change Through Teacher Enhancement in Science Grades 6-12

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## *Program Announcement and Guidelines*

### SUBMISSION DATES:

#### **Preliminary Proposals:**

*March 16, 1998*

#### **Planning Grants:**

*Anytime*

#### **Full Proposals:**

*May 4, 1998*



NATIONAL SCIENCE FOUNDATION  
Directorate for Education and Human Resources

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The Foundation welcomes proposals from all qualified scientists and engineers and strongly encourages women, minorities, and persons with disabilities to compete fully in any of the research and education related programs described here. In accordance with federal statutes, regulations, and NSF policies, no person on grounds of race, color, age, sex, national origin, or disability shall be excluded from participation in, be denied the benefits of, or be subject to discrimination under any program or activity receiving financial assistance from the National Science Foundation.

Facilitation Awards for Scientists and Engineers with Disabilities (FASSED) provide funding for special assistance or equipment to enable persons with disabilities (investigators and other staff, including student research assistants) to work on NSF projects. See the program announcement or contact the program coordinator at (703) 306-1636.

Privacy Act. The information requested on proposal forms is solicited under the authority of the National Science Foundation Act of 1950, as amended. It will be used in connection with the selection of qualified proposals and may be disclosed to qualified reviewers and staff assistants as part of the review process; to applicant institutions/grantees; to provide or obtain data regarding the application review process, award decisions, or the administration of awards; to government contractors, experts, volunteers, and researchers as necessary to complete assigned work; and to other government agencies in order to coordinate programs. See Systems of Records, NSF 50, Principal Investigators/Proposal File and Associated Records, and NSF-51, 60 Federal Register 4449 (January 23, 1995), Reviewer/Proposal File and Associated Records, 59 Federal Register 8031 (February 17, 1994).

Public Burden. Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of your receiving an award.

The public reporting burden for this collection of information is estimated to average 120 hours per response, including the time for reviewing instructions. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Suzanne Plimpton, Reports Clearance Officer, Information Dissemination Branch, National Science Foundation, 4201 Wilson Boulevard, Suite 245, Arlington, VA 22230.

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# Local Systemic Change Through Teacher Enhancement in Science Grades 6-12

## Submission Dates:

Preliminary Proposals: *March 16, 1998*

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## INTRODUCTION:

This targeted solicitation calls for the reform of the teaching and learning of secondary science, to more closely align it with the National Science Standards. The solicitation falls within the category of "local systemic change" projects as described in Elementary, Secondary, and Informal Education Program Announcement and Guidelines (NSF 98-4). Local systemic change projects are characterized by: a shift in focus from the professional development of the individual teacher to the professional development of all teachers within the whole school organization; a vision of what the K-12 science/mathematics/technology program should be; and a plan for the implementation of exemplary, standards-based instructional materials. Professional communities should be created, where teachers are empowered to bring about change and encouraged to reflect on their own teaching and learning. New beliefs, new skills, and new behaviors must be learned and explored within a supportive school community which itself is engaged in renewal. In addition, just as students should develop a deep understanding of science knowledge and processes through investigation, discourse, and participation in research activities, so too should their teachers. This initiative targets all teachers who teach science courses either as part or all of their teaching duties.

Given the complex nature of secondary schools and the challenge of requiring an interconnected, quality science program to educate ALL students, there is a need for creative approaches. As such it is anticipated that systemic change projects will be characterized by a new paradigm that shifts the focus from the current disciplinary emphasis on individual science courses to a consideration of the entire science program within schools and even districts. NSF expects to support a number of projects that employ fundamentally different strategies for accomplishing change, and that offer all students a coherent standards-based science program for grades 6-12. Student outcomes must be considered as an essential part of demonstrating project success. Institutionalization of project innovations is a goal; a commitment to measurable outcomes and

evaluation is essential so that NSF may increase its knowledge base from the experiences of these projects.

## COMPONENTS OF ALL PROJECTS:

This solicitation encourages schools, school systems, or collaborations of schools, with their partners, to initiate systemic efforts that will result in teachers of grades 6-12 making significant progress towards reaching national goals for the teaching of science. Though this solicitation covers grades 6-12, systems must articulate how the proposed project is part of a clear comprehensive plan that addresses the improvement of K-12 education in science for all students in their schools, both those going directly into the workforce and those going on to post-secondary education. Projects supported by this solicitation must be designed to impact all teachers of grades 6-12 science or a subset thereof, such as all teachers of grades 9-12 science or all science teachers of grades 6-12 in a particular set of schools within a large system. Projects also may include teachers of grade five if the school environment in which they teach is designed around clusters having a disciplinary focus (as opposed to self-contained classrooms where teachers have responsibilities for all subject areas), and they are part of a comprehensive project that impacts teachers of middle and/or secondary science. A project may include some subset of the mathematics, technology, or other teachers, but must include all science teachers in the targeted levels. Whatever the defined scope of the project, the Local Systemic Change in Science (LSCS) project must include a coherent plan to reach all the teachers of science within that project with an appropriate amount of professional development.

The professional development program must provide appropriate activities for all participating science teachers to gain in their knowledge of content and pedagogy so that their practice will be aligned with quality, standards-based, instructional materials. The project must address issues that arise because teachers may be required to teach science outside their field of expertise. For example the

professional development program for a biology teacher may include a significant number of professional development hours learning about genetics to implement new instructional materials. However, if a teacher who has not majored in biology is required to teach biology then the proposal must address how the school district will remedy the teacher's lack of basic knowledge in biology before participating in a project that prepares him or her to teach genetics.

All projects are expected to focus the professional development of teachers on the implementation of exemplary instructional materials that are consistent with the National Science Education Standards, National Academy Press, 1996. Therefore the instructional materials to be implemented in the project and the professional development program offered for teachers must reflect those standards. To be successful, projects must align policy and practice and should include the following.

- A shared comprehensive vision of science, which includes goals and objectives for student learning, and incorporates national and state standards for curriculum, teaching practice, and assessment. The focus should be a curriculum for all the sciences taught in the school and the professional development of all teachers of science. The connections of science to other disciplines is important so that all students achieve mastery of appropriate scientific principles and practice. The vision of science should encompass opportunities for all students to participate in the entire spectrum of research, including collection of data and performing experiments through short and long-term projects.
- Active partnerships predicated upon close collaboration and communication among critical stakeholders. There are many stakeholders in science reform at the secondary level and from the onset, planning and implementation should include the development of a shared vision. Stakeholders include, but are not limited to, faculty from two and four year colleges, parents, teachers and teacher unions, science specialists, administrators and decision makers at the school, district and state level, and experts from business and the private sector. Partnerships with institutions of higher education, the informal science community, professional societies, and the business sector especially are encouraged.
- A detailed self study that provides a realistic assessment of the system's current strengths and needs that have a bearing on project development. Such an assessment should include the identification of: teacher needs, based on the current status of instruction and the selected curriculum; resources, both human and material, that support the reform effort; related NSF and other projects that impact the system; and state and local policies that directly influence instruction.
- Strategic planning that incorporates mechanisms for engaging each science teacher in intensive professional development activities over the course of the project. The plan also should be based on: current research on teacher and system change; effective teacher enhancement models; selection of exemplary, standards-based instructional materials and programs which have been proven effective; use of performance-based student assessment; appropriate uses of educational technology for students and teachers in science; follow-up and ongoing support for teachers after NSF funding ceases; and strategies for institutionalizing the new programs and sustaining the newly established partnerships.
- Leadership and technical support for the participating school districts to design, develop, and enact a framework for science curriculum and instruction. The content and approach to teaching, learning, and assessment expressed in the science framework should be derived from and consistent with state and national standards for science education. The science framework will provide for a coherent development of concepts and topics, vertically (across grade levels) and horizontally (across the school year within a grade level). Proposals are to describe the science framework and the instructional materials that are to be the foundation for the school science program. Evidence of quality for instructional materials, which should be provided in the proposal, includes the following: (1) the materials were developed and reviewed by a team of teachers, scientists and science educators; (2) the materials were pilot tested and field tested with students and classroom contexts similar to the target audience; (3) the goals and learning activities align with national standards; and (4) the evaluation establishes the effectiveness of the materials at promoting student achievement.
- Appropriate integration of educational technologies. Educational technologies should be linked to ways of learning that cannot be achieved by other methods, such as encouraging exploration and investigation or providing access to data, tools and other resources.
- An evaluation plan that supplements the Core Evaluation and that provides on-going feedback for the project and allows NSF to determine the project's progress.

## **GUIDELINES FOR PROPOSAL DEVELOPMENT**

### **PRELIMINARY PROPOSAL REQUIREMENT**

All programs in ESIE require submission of a preliminary proposal. Preliminary proposals give NSF staff the opportunity to comment on a proposal's responsiveness to program goals and priorities and its potential to compete successfully with other proposals in the merit review process. Preliminary proposals must be postmarked by March 16, 1998 for a full proposal to be eligible for submission to the next competition. PI's should submit preliminary proposals as early as possible to ensure adequate time to consider staff reviews.

### **PROPOSAL SUBMISSION**

Proposals should follow requirements set forth in the Grant Proposal Guide (GPG) (NSF 98-2). Single copies of the GPG are available at no cost from the NSF Publications Clearinghouse, via electronic mail at [pubs@nsf.gov](mailto:pubs@nsf.gov), or can be read and downloaded from the World Wide Web at <http://www.nsf.gov>.

### **PLANNING GRANTS:**

In situations where coalitions and alliances need to be forged, planning grants will be considered for a maximum of one-year and up to \$50,000 (with no more than 10% indirect costs allowed). They are intended for proposers who, without such support, do not have the resources to bring together the requisite stakeholders and experts for the development of a comprehensive plan. (Urban Systemic Initiative [USI] and Comprehensive Partnerships for Mathematics and Science Achievement [CPMSA] cities are not eligible for planning grants.)

### **FUNDING LEVELS FOR FULL PROPOSALS:**

LSCS projects may request up to \$1.0 million for each year of the project. The maximum project total is determined by multiplying the total number of teachers reached for a minimum of 130 hours over the course of the project by \$4,500.

Not all teachers need the same amount or type of professional development, nor will all professional development require the same amount of NSF support. It is

not necessary that \$4,500 be spent on **ALL** teachers. For example, strategies may vary by heavily investing in development of mentors or lead teachers or in providing additional resources to strengthen content background of under-prepared teachers.

For USI cities, the NSF USI contribution must be a minimum of 20% of the amount requested for the project from the Teacher Enhancement program for the years both grants are in effect.

NSF expects to make up to 12 awards under this solicitation, depending upon availability of funds and quality of proposals received. NSF funds are primarily intended to help support teacher professional development. [Proposals should indicate the amounts and sources of funding for ongoing support for teachers (beyond the NSF funding period) and for long term evaluation.] For other budget information see the section on Proposal Preparation in Elementary, Secondary, and Informal Education Program Announcement and Guidelines (NSF 98-4).

### **LSCS PROJECT CHARACTERISTICS:**

- **Eligibility**—School districts or coalitions of school districts in partnership with at least one outside organization with a scientific or educational mission may submit proposals. Among the latter are: colleges and universities, state and local education agencies, professional societies, research laboratories, private foundations, and other public and private organizations whether for-profit or nonprofit. Any of the partners may serve as the lead fiscal agent. Not all schools in a district are required to participate in the project when there are convincing reasons to do otherwise, but district commitment to the project remains a requisite.

School districts that have K-8 Local Systemic Change projects in science that include grades 6-8 in their project may not request funds under this solicitation for the support of activities related to grades 6-8, nor may those who have Local Systemic Change 7-12 projects in mathematics receive funds through the LSCS initiative for activities related to their mathematics program. Proposals from CPMSA project sites or USI cities must clearly indicate how the proposed project and the CPMSA project, or USI project, would complement one another and the need for both.

- **Focus**—Projects must be clearly placed in the context of a comprehensive strategy for grades K-12 and must focus on the middle and high school system; however, they may address a component of the 6-12 system. For example, LSCS projects could target all core teachers of science in

grades 6-10 as the key component of a broader vision for science K-12.

- **Coverage**—LSCS projects must include at least 100 teachers of science each receiving no less than 130 hours of intensive professional development activities. Those districts or coalitions of districts who do not have 100 science teachers may include those technology teachers who are fully involved in the project in the minimum requirement of 100 teachers. Although all science teachers in the targeted subset or grade levels must be involved in the project, not all may need intensive professional development. Therefore, some additional teachers beyond the 100 minimum may be involved in other substantive ways with the project. In this context, participants could be expanded beyond the 100 teachers to include other educators who have a stake or are directly affected by the science curriculum. For example, projects could target an expanded audience that includes school administrators, counselors, librarians, technology teachers or teachers of related disciplines.

- **Duration**—Duration of LSCS projects is expected to be from three to five years. Planning grants will not exceed one year.

- **Funding Levels**—LSCS projects may request up to \$1.0 million for each year of the project—the maximum determined by multiplying the total number of teachers reached who will receive at least 130 hours of professional development over the course of the project by \$4,500. (See discussion above for more detail.)

- **Allowable Costs**—NSF funds are intended to support teacher enhancement activities, not the actual costs of purchasing instructional materials for classrooms. Proposals must indicate the amount and source of funding for the following even though these expenses are not funded by NSF: classroom instructional materials, equipment, and supplies; ongoing support for teachers beyond the NSF funding period; and long-term evaluation. In situations where networking technology would help sustain professional development opportunities for teachers, equipment purchase will be considered within the allowable funding level so long as other requirements are met.

- **Cost-sharing**—Cost-sharing from school systems, state funds, the private sector, higher education, or other partners is required for all projects. Any cost sharing commitments specified in the proposal will be referenced and included as a condition of an award resulting from this announcement.

- **Evaluation**—LSCS projects must participate in a standardized, core evaluation that allows measurement of each project's progress toward attainment of quality standards for SMT teaching; aggregation of

data/information across projects; and cross-project analysis. The core evaluation consists of a data collection framework (including a set of instruments and procedures). It ensures program accountability and provides a basis for assessing progress on which continued project funding will depend.

The core evaluation calls for collection of both qualitative and quantitative data, which includes teacher and school administration surveys, classroom observations, and teacher interviews, and requires roughly 50 days of staff time, depending on the number of teachers and schools participating in the project. Each project must designate a lead evaluator to serve as liaison with the NSF evaluation contractor and to oversee data collection. Core evaluation activities may be carried out by others (e.g., consultants and/or district employees) with evaluation expertise.

In addition to the core evaluation, projects are expected to conduct their own evaluations to gather formative and summative data and make mid-course corrections. Included in the project's evaluation plan should be data on assessment of student learning at both classroom and district levels. State assessments using items from tests such as the National Assessment of Education Progress (NAEP) and the Third International Mathematics and Science Study (TIMSS), among others, may be used to measure success and needs.

**Receipt of Continuing Grant Increments**—No continuing grant increments will be made for LSCS projects unless the PI remains up to date with requirements of the core evaluation.

## **LSCS SPECIAL PROPOSAL REVIEW CRITERIA:**

The reform strategy employed in LSCS projects should be aligned with nationally recognized content, teaching, and assessment standards for Science, Mathematics, and Technology (SMT) education, as well as with existing state frameworks, as appropriate. Successful projects must also align policy and practice. Proposals will be reviewed in accordance with procedures described in the Grant Proposal Guide (NSF 98-2), as well as the following specific criteria:

- **Vision**—The project must be based on a shared, comprehensive vision of science, mathematics and technology education among major stakeholders and a professional development strategy that is clearly articulated for grades K-12. The vision for the science teachers should include goals and objectives for student learning and incorporate national and state standards for curriculum, teaching practice, and assessment.

- **Needs Assessment**—The proposed strategy must be

based on a realistic assessment of the system's strengths and weaknesses. Such assessments should identify: teacher needs based on the current status of instruction and the chosen curriculum; staff and material resources available to support the reform effort; related activities (both NSF and others) impacting the system; and state and local policies directly influencing instruction.

- **Curriculum Implementation**—Participating schools or school districts must delineate a curriculum plan for their science, or science and technology, program. Instructional materials to be implemented in participating schools must fit within that curriculum plan, must be aligned with state and national education standards, and must have been extensively field tested and proven effective. Instructional materials can include print or non-print material or other forms of media, as appropriate to the project goals. The proposal must identify the instructional materials to be implemented or must submit a list of instructional materials to be considered for adoption, accompanied by the process and criteria for selection. The selection process must be completed before or during the first year of the grant. If these materials are not nationally recognized, representative samples should accompany the proposal to demonstrate content accuracy and soundness of instructional practice. The professional development strategy and resource levels must be adequate to implement selected curricula across the school system.

- **Strategic Plan**—Project design must be consistent with the articulated vision for K-12 SMT education. The plan should be based on: current research on teacher and system change; effective teacher enhancement models; selection of existing, exemplary instructional materials and curricula; appropriate student assessment; effective use of technologies for students and teachers; follow-up and ongoing support for teachers after NSF funding ceases; and strategies for institutionalizing new programs and sustaining newly established partnerships. If new equipment, technologies, or technical support are called for, the plan should include strategies for meeting those needs.

- **Cooperative Relationships**—The project should forge partnerships between the school system(s) and partners from among higher education, business and industry, museums, media, and other parts of the private sector that will support quality SMT education. Reasonable working relationships must be established and clearly evidenced in the proposal. The project should, whenever possible, capitalize on and coordinate with NSF investments in related education projects (e.g., other large-scale TE projects (current or recent past), State Systemic Initiatives (SSI), Urban Systemic Initiatives (USI), Rural Systemic Initiatives (RSI), NSF Collaboratives for Excellence in Teacher Preparation).

- **Cost-Sharing**—The project should leverage appropriate

contributions from school systems, higher education, state agencies, private foundations, business and industry, professional societies, or local communities. The proposed cost-sharing will be considered in evaluating proposals and will be a condition of any resulting award. The amount of cost-sharing must be shown in the proposal in enough detail to clearly demonstrate its impact on the project. Documentation of auditable cost sharing must be included in the proposal and listed on line M of the Summary Proposal Budget, NSF Form 1030.

Funds from non-Federal sources can be counted as cost-sharing against only one Federal project. The level of cost-sharing reported in line M of the final negotiated budget is auditable and its attainment becomes a precondition for future funding increments. Only items that would be allowable under the applicable cost principles may be included as the grantee's contribution to cost-sharing, see GPG (NSF 98-2). Classroom materials, equipment, and supplies—the purchase of which is not supported by NSF funds—will be allowed and expected as cost-sharing. While other Federal funds are not an acceptable source of auditable cost-sharing under NSF reporting regulations, it is anticipated that LSCS projects will leverage and complement activities supported with other Federal funds, in particular Title I, Goals 2000, and/or Eisenhower. Use of these funds should be described in the budget explanation, separate from the cost-sharing information.

## PREPARATION AND SUBMISSION OF PROPOSALS

### GENERAL INFORMATION

This section provides basic information needed to initiate planning for proposal submission. Detailed NSF guidelines on proposal preparation, submission, evaluation, awards (general information and highlights), declinations, withdrawal, and required forms can be found in Grant Proposal Guide (GPG) (NSF 98-2). Single copies of this publication are available at no cost from the NSF Publications Clearinghouse, by e-mail from [pubs@nsf.gov](mailto:pubs@nsf.gov) by telephone: (703) 292-7827; or via the World Wide Web: <http://www.nsf.gov>. These guidelines apply except where specifically modified in this program announcement.

Additional details are contained in the NSF Grant Policy Manual (GPM) (NSF 95-26), available electronically through the World Wide Web: <http://www.nsf.gov>, or for purchase at \$21.00 from the Superintendent of Documents, Government Printing Office, Washington, DC 20402. The GPM is not ordinarily needed to prepare a proposal. However, if a submitting organization has never received an NSF award, it is recommended that appropriate

administrative officials become familiar with the NSF policies and procedures contained in this GPM as they apply to most NSF awards. Prior to receipt of an award, such institutions will be required to provide the Division of Grants and Agreements certain organizational, management, and financial information (see Chapter V of the GPM).

## PRELIMINARY PROPOSALS

To be eligible for submission, a full proposal must either be 1) based on a preliminary proposal to that program and subsequent response letter from an NSF Program Officer or 2) a revision to a previously declined proposal from that program. Any exception must get prior approval from the relevant program within ESIE.

Preliminary proposals should be submitted as far as possible in advance of the target dates for full proposal submission, but must be postmarked no later than the preliminary proposal submission date designated for each full proposal target date. Staff reviews will be returned as expeditiously as possible, but no later than one month prior to the date for submission of a full proposal.

All preliminary proposals formatting should follow the requirements specified in the GPG, unless otherwise noted as follows.

- \* Single-spaced Pages.
- \* Top, bottom, side margins—No less than 2.5 cm.
- \* Type size—Must be clear and legible with no more than 12 characters per 2.5 cm if using constant spacing. No more than an average of 15 characters per 2.5 cm if using proportional spacing.
- \* Pages—All preliminary proposals are limited to no more than six (6) pages of narrative, including an abstract, and not more than two (2) additional pages for the vitae and budget. Pages must be numbered sequentially (preferably at the bottom), be of standard size, and conform to standard formatting instructions set in GPG (NSF 98-2). NO APPENDICES or attachments are allowed.
- \* Copies—Single side of page only. Submit two (2) copies of the proposal to the appropriate program.

**FAILURE TO FOLLOW THE ABOVE REQUIREMENTS MAY RESULT IN THE RETURN OF THE PRELIMINARY PROPOSAL UNREAD AND DELAY SUBMISSION OF A PROPOSAL FOR ONE REVIEW CYCLE.**

A Preliminary Proposal should contain the following:

- \* A one-page letter of transmittal which is not included in the page limit. This letter should clearly indicate the program to which the proposal is to be submitted, as well as the name and address of the PI to whom reviews should be sent. As appropriate, indicate type of project (LSCS), disciplinary focus, and grade level(s).
- \* **Narrative**—The narrative should begin with an abstract no longer than 100 words that describes the content and audience for the project. The narrative should address the following topics: 1) need for the project; 2) the project goals or objective; 3) the essential features of the project design or workplan describing how the project will be accomplished and the goals achieved; 4) evaluation plans (both formative evaluation to inform development of the project and summative to assess the impact of the project on the target audience); and, 5) dissemination plans.
- \* **Budget**—Preliminary proposals should provide an estimated budget for total cost to be requested from the Foundation with information, as appropriate, on salaries, equipment (where allowable), participant costs, consultant costs, travel, indirect costs, and cost share from other sources, including any partners and their contribution.
- \* **Vitae**—Preliminary proposals should provide a brief narrative description of the expertise relevant to the proposed project of key personnel (e.g., educators, researchers, evaluators) to be involved. Those vitae should be complete enough to show that the necessary expertise is available to conduct the project.

## Submission of Preliminary Proposals.

- \* Preliminary proposals should be mailed as early as possible, but must be postmarked no later than March 16, 1998 in order to be eligible for the next full proposal submission date. Two copies should be sent directly to:

LSCS  
National Science Foundation—ESIE/EHR  
4201 Wilson Boulevard—Room 885  
Arlington, VA 22230

## FULL PROPOSALS

**Contents**—Full proposals should contain the following information, assembled in the order indicated below. NSF forms are available in the GPG (NSF 98-2) and through the World Wide Web at <http://www.nsf.gov>.

**Cover Sheet**—The cover sheet must contain all requested information. One copy of the cover sheet must carry the original signature of the Principal Investigator (PI), all co-PIs, and the authorized organizational representative. If project funds are requested from another federal agency or another NSF program, it must be indicated in the upper-right-hand section. If such funds are requested subsequent to proposal submission, a letter should be sent to the relevant program in the ESIE Division, identifying the proposal by its NSF number.

The top left box must identify the special initiative or program to which the proposal is being submitted (LSCS).

Project titles help direct proposals to appropriate reviewers and communicate the nature of projects supported with NSF funds to the general public and scientific community. They should include informative key words that indicate, for example, the discipline, grade level (when relevant), target audience, and the nature of the project.

**Project Summary**—A one-page summary, suitable for publication, should be prepared that presents a self-contained description of the activity that would result if the proposal were funded. It should be written in the third person, in the present tense, and include an indication of the need being addressed, a statement of objectives, methods to be employed, potential contribution to the advancement of knowledge, and a description of the products or outcomes resulting from the project. It should be informative to other persons working in the same or related fields and, as much as possible, understandable to a scientifically or technically literate lay reader.

**Project Data**—This information is primarily used to communicate potential project impact and general project characteristics, as well as to direct proposals to appropriate reviewers.

**Project Narrative** (including results from prior NSF support)—The narrative presents most of the information that determines whether or not a grant will be awarded. It should be written to respond to criteria that will be used by reviewers in judging the merit of the proposal as described in this document.

If the prospective PI or co-PI(s) received support for related NSF activities within the past five years, a brief 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, 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). Descriptions of results of relevant prior NSF support (see below) should be limited to five (5) pages and

must be included as part of the page limitations listed below. PI's must have submitted an NSF Form 98A (Final Report) for any completed NSF-funded project or no new grant may be awarded. Formatting should follow requirements specified in the GPG, except as follows:

- Single-spaced pages 15 (Full), 10 (Planning), or
- Double-spaced (four printed lines per 2.5 cm.) pages 30 (Full), 20 (Planning)
- Top, bottom, side margins—No less than 2.5 cm.
- Type size—Must be clear and legible with no more than 12 characters per 2.5 cm., if using constant spacing. No more than an average of 15 characters per 2.5 cm., if using proportional spacing.
- Copies—Single side of page only.

Proposals not conforming to these requirements will be returned by NSF.

**Vitae** (NSF Form 1362)—Biographical information (no more than two pages) must be provided for each person listed as senior personnel on NSF Form 1030 (Proposal Budget); include career and academic credentials and a mailing address.

**Budget** (NSF Form 1030) and **Budget Justification**—Proposals must contain a budget for each year of requested support and a cumulative budget for full NSF support. Facsimiles of NSF Form 1030 may be used, but at no time may substitutions or deletions in budget categories be made. The proposal may request funds under any budget category so long as the item is considered necessary to perform the proposed work and is not precluded by program guidelines or applicable cost principles. All budget requests must be documented and justified. Ordinarily, no funds are made available for equipment or facilities. Estimates of calendar months of activity must be reported for categories of key personnel. The proposed level of nonfederal cost-sharing must be included on Line M. Additional information on completing the budget can be found in the GPG (NSF 98-2).

**Current and Pending Support** (NSF Form 1239)—All current and pending externally-funded support (including that from non-NSF sources) to the PI and co-PI's (if any) must be listed on the form. The proposed project and all other projects or activities requiring a portion of the time of the PI or other senior personnel should be included, even if they receive no salary support from the project. The number of person-months per year to be devoted to the projects must be stated, regardless of source of support. Similar information must be provided for all proposals already submitted or submitted concurrently to other possible sponsors, including NSF. This information is needed to

ensure that key personnel have time to carry out the project and that there is no duplication of support.

**Appendices**—Reviewers are often asked to read and assess a substantial number of competing proposals. For this reason, the proposal description alone should provide sufficient information so that a reviewer unfamiliar with the 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 instructional materials, or to provide other relevant information. Such material can be included in appendices which are clearly referenced by the proposal. Presentation of such materials should be thoughtful and concise. Reviewers are not generally required to read appendices.

Proposals seeking to implement curriculum in Local Systemic Change and Replication projects (TE Program) must include a complete description of the materials; samples of materials should be sent directly to the program for exhibit to reviewers. Prospective PI's are encouraged to contact NSF Program Officers if they have any questions regarding submission of appendix materials.

Appendices should be clearly labeled, paginated, and identified in the Table of Contents.

### **Submission of Full Proposals.**

Required materials must be postmarked no later than May 4, 1998. ESIE programs require:

- \* one (1) copy sent directly to the program at

LSCS  
National Science Foundation—ESIE/EHR  
4201 Wilson Boulevard—Room 885  
Arlington, VA 22230

Include a transmittal letter identifying the preliminary proposal or declination number on which the proposal is based, the program to which it is being submitted, the title, as well as grade level and disciplinary focus.

- \* 14 copies including the signed original, sent in a single package to:

NSF Proposal Processing Unit ATTN: EHR/ESIE—LSC  
National Science Foundation  
Room P60  
4201 Wilson Boulevard  
Arlington, VA 22230

The following materials must be included with all proposal submissions:

- \* One copy of "Supplementary Information on PI's/Project Director" (NSF Form 1225). Do not include a copy of Form 1225 in the body of the proposal, since this would compromise the confidentiality of the information. While providing information requested on NSF Form 1225 is voluntary, submission of this form is required by NSF and its omission will cause delay in processing the proposal. NSF forms can be found in the GPG (NSF 98-2) and through the World Wide Web at

<http://www.nsf.gov>.

The following requirements also must be met:

- \* All materials submitted to NSF must be contained in a secured package. NSF cannot be responsible for the processing of proposals damaged in transit.
- \* Each copy of the proposal should be on standard sized paper of regular weight. It should be stapled only in the upper left hand corner and should not be bound by means of glue, spirals, wire, clasps, or any other means. All narrative and appendix pages must be numbered. The duplicating process should ensure legibility for at least five years.
- \* One copy must be signed by the PI, all co-PIs, and the administrative official who has been designated as an Authorized Institutional Representative.

Proposals, including any ancillary material, submitted to the ESIE Division are considered the property of the NSF and are not returned.

### **Administration of Awards**

Grants awarded as a result of this announcement will be administered in accordance with the terms and conditions of NSF GC-1 (10/95) or FDP-III (7/96), **Grant General Conditions**. Copies of these documents are available at no cost from the NSF Publications Clearinghouse, by telephone, (703) 292-7827

or via e-mail: [pubs@nsf.gov](mailto:pubs@nsf.gov). More comprehensive information is contained in the Grant Policy Manual (NSF 95-26) for sale through the Superintendent of Documents, Government Printing Office, Washington, DC 20402. NSF Publications may also be obtained from the World WideWeb at <http://www.nsf.gov>.

## **GLOSSARY OF TERMS**

### **Comprehensive Project:**

In order for teachers of grades 5-6 to be included in the project, they must be part of a “comprehensive project” that impacts teachers of middle and/or secondary science or science and technology. A comprehensive science project implies that the science curriculum is cohesive and connected, as are the instructional materials that are aligned with the curriculum. The sequencing of curriculum and instructional materials is continuous, so that each grade level directly connects with and builds to the grade immediately following.

### **Number of Teachers Reached:**

To be counted as “having been reached” for the purpose of computing the total project budget amount, a teacher must receive at least 130 hours of enhancement over the length of the project. This enhancement could come in the form of such activities as: summer inservice experiences; after school, during released days or Saturday inservice; classroom mentoring and/or supervision; supervised leadership activities, etc.

### **SSI States/ Jurisdictions:**

Arkansas	Kentucky	New Jersey	South Dakota
California	Louisiana	New Mexico	Texas
Colorado	Maine	New York	Vermont
Connecticut	Massachusetts	Puerto Rico	
Georgia	Michigan	South Carolina	

### **USI Cities:**

Baltimore	Dallas	Memphis	Philadelphia
Chicago	Detroit	Miami	Phoenix
Cleveland	El Paso	Milwaukee	San Antonio
Columbus	Fresno	New Orleans	San Diego
	Los Angeles	New York	St. Louis

## LOCAL SYSTEMIC CHANGE THROUGH TEACHER ENHANCEMENT IN SCIENCE *Project Data Sheet*

**(A completed project data sheet must accompany the proposal and each year's progress report.)**

**A. Project Information**

Title: \_\_\_\_\_  
 Principal Investigator: \_\_\_\_\_  
 PI Address: \_\_\_\_\_  
 Phone: \_\_\_\_\_ FAX: \_\_\_\_\_ E-mail: \_\_\_\_\_  
 Institution: \_\_\_\_\_  
 Auditable Cost-Sharing \$ \_\_\_\_\_ (Exclude all Federal funds)  
 Award Number: \_\_\_\_\_  
 Program Officer: \_\_\_\_\_

**B. Other Funding Sources:**

NSF Other (e.g. non-TE, USI, SSI): \$ \_\_\_\_\_  
 Institution of Higher Education \$ \_\_\_\_\_  
 Foundations: \$ \_\_\_\_\_  
 Federal: \$ \_\_\_\_\_  
     Eisenhower: \$ \_\_\_\_\_  
     Chapter 1: \$ \_\_\_\_\_  
     Other Agencies \$ \_\_\_\_\_  
 State/Local (if not grantee): \$ \_\_\_\_\_  
 Industry: \$ \_\_\_\_\_  
 Other (explain): \$ \_\_\_\_\_

**Area from Guidelines (check one)**

Local Systemic Change \_\_\_\_\_  
 Materials for Professional Development \_\_\_\_\_  
 Teaching Enhancement: \_\_\_\_\_  
     Leadership \_\_\_\_\_  
     Research Experience for Teachers \_\_\_\_\_  
     Research Exp. For Teachers/Students \_\_\_\_\_  
 Replication & Scale-up \_\_\_\_\_  
 Professional Support for the  
     Teaching Workforce \_\_\_\_\_  
 Planning Grant \_\_\_\_\_  
 Conference \_\_\_\_\_

**C. Science /Math Content : [Sum = 100]**

Astronomy (11) _____ %	Geography (88) _____ %
Biology (61) _____ %	Life Sciences (69) _____ %
Chemistry (12) _____ %	Mathematics (21) _____ %
Computer Science (31) _____ %	Physics (13) _____ %
Earth Science (42) _____ %	Physical Sciences (19) _____ %
Engineering (50) _____ %	Psychology (70) _____ %
Environmental Sci. (49) _____ %	Social Sciences (80) _____ %
General Science (99) _____ %	Technology (58) _____ %
Other (explain) _____ %	

**D. Participants:** For each calendar year that applies, estimate the number of teachers directly participating in the project and the number of hours of professional development (including follow-up activities) each teacher receives.

Direct, Including Repeating	Grade 5	Grades 6-8	Grades 9-12	Prof. Development Hours/Teacher
Year 1				
Year 2				
Year 3				
Year 4				
Year 5				

Indicate the number of teachers who received at least 130 hours of professional development over the life of the project \_\_\_\_\_.



**NATIONAL SCIENCE FOUNDATION**

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CFDA 47.076

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