



Presidential Awards
for Mathematics
and Science Teaching

2005 Application Packet

Teachers of Grades 7-12
Application Deadline: May 2, 2005

The Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) Program was established in 1983 by The White House and is sponsored by the National Science Foundation (NSF). The program identifies outstanding mathematics and science teachers, kindergarten through 12th grade, in each state and the four U.S. jurisdictions—Washington, D.C., Puerto Rico, Department of Defense Schools, and the U.S. Territories as a group (American Samoa, Guam, the Commonwealth of the Northern Marianas, and the U.S. Virgin Islands). These teachers will serve as models for their colleagues and will be leaders in the improvement of science and mathematics education.

Since 1983, more than 3,000 teachers have been selected as Presidential Awardees. They represent a premier group of mathematics and science teachers who bring national and state standards to life in their classrooms. They provide the Nation with an impressive array of expertise to help improve teaching and learning while becoming more deeply involved in activities such as curriculum materials selection, research, and professional development. While most teachers remain in the classroom, some have become school principals, supervisors, superintendents and college faculty.

In 2005, teachers of grades 7-12 mathematics and science in each state and the four U.S. jurisdictions who have been nominated will be eligible to apply. Teachers of grades K-6 will be eligible for Presidential Awards in 2006.

Teachers applying for the 2005 PAEMST must be nominated. Anyone (e.g. principals, teachers, students, and other members of the general public) may nominate a teacher. **Self-nominations will not be accepted.**

Each Presidential Awardee will receive a \$10,000 award from the National Science Foundation and gifts from donors. Each Awardee will also be invited to attend, along with a guest, recognition events in Washington, D.C., in March 2006, which will include: an award ceremony; a Presidential Citation; meetings with leaders in government and education; sessions to share ideas and teaching experiences; and receptions and banquets to honor recipients.

Administered by the National Science Foundation for The White House, the PAEMST Program is an activity of the NSF Directorate for Education and Human Resources, Division of Elementary, Secondary, and Informal Education.

2005 Presidential Award Program Information

Eligibility The following are the eligibility criteria for the 2005 nominees:

- Teachers who are assigned to grades 7-12 mathematics and/or science classrooms in a public or private school in a state or eligible jurisdiction;
- Teachers who have at least five years teaching experience in grades 7-12 in mathematics and/or science prior to application;
- Teachers who are full-time employees of their school districts;
- Grades 7-12 teachers who are assigned, at least half time during the school year, to classroom teaching of mathematics or science, or grades 7-8 self-contained classroom teachers; and
- Teachers who are employed in any of the 50 states or four U.S. jurisdictions. The jurisdictions are Washington, D.C., Puerto Rico, Department of Defense Schools, and the U.S. Territories as a group—American Samoa, Guam, the Commonwealth of the Northern Marianas, and the U.S. Virgin Islands.

*Please note that past Presidential Awardees are **not** eligible.*

Categories Teachers compete in either the mathematics or science category.

Selection Process

- Teachers must be nominated for the award. Anyone (e.g., principals, teachers, students, other members of the general public) may nominate a teacher for the award by filling out the nomination form available on the PAEMST website, www.paemst.org. The form will be submitted to the state coordinator and a copy sent to the nominee.
- State and jurisdiction selection committees choose at most three finalists from each of the award groups (mathematics or science) for recognition at the state level. Each of the state-level finalists receives the National Science Foundation State Certificate for Excellence in Teaching Mathematics and Science. **To ensure consistency across states, the state selection committees will use the criteria in this application to score submissions.**
- A national selection committee, comprised of prominent mathematicians, scientists, mathematics/science educators, and past awardees, reviews the application packets of the state-level finalists and makes recommendations to the National Science Foundation. These recommendations are sent forward to the President of the United States.

Application Packet Components

All applicants to the PAEMST Program must provide the following components in their application packet.

- I. Nomination Form
- II. Evidence of Talent in Teaching
 - A. Video of Lesson
 - B. Written Responses on the Videotaped Lesson
 1. Context of the Featured Lesson
 2. Synopsis of the Lesson
 3. Reflections on Your Instruction in the Featured Lesson
 4. Reflections on Student Work
- III. Sample of Student Work
- IV. Background and Experience
- V. Letter of Employment Confirmation

Application Packet Requirements

All narrative material must be word processed or typewritten.

I. Nomination Form

A copy of the nomination form from the state coordinator should be included in this packet.

II. Evidence of Talent in Teaching

Purpose: To demonstrate what the applicant considers excellent teaching and how he/she attempts to exemplify it.

A. Video of Lesson

1. Selecting the Lesson

Applicants are asked to provide an **unedited** VHS video of a single lesson, from 20 to 60 minutes of instruction, aimed at developing student understanding of an important mathematics or science concept. While lessons aimed at developing student understanding of the mathematics and science concept(s) often have other goals (e.g., understanding scientific inquiry, learning mathematics problem solving strategies) or may be interdisciplinary in nature, the videotaped lesson should focus primarily on the development of the important mathematics or science concept(s). The video should be of the applicant teaching 7th-12th grade students in the 2004-2005 school year.

2. Adhering to School and District Videotaping Policies

Some districts/schools may require that signed releases be obtained from parents. Please check with the appropriate district/school personnel for local requirements.

3. Videotaping the Lesson

Although applicants are not expected to submit professional-quality videotapes, it is important that the quality of the videotape allow state and national selection committee members to clearly **see** and **hear** what is happening in the lesson. Not only will they want to hear the teacher, they will also want to hear the students interacting with the teacher and with one another.

The video should not be edited; the camera should be started at the beginning of the lesson and not stopped until the end of the lesson. You may have someone else shoot the video (e.g., another teacher, a student, a district employee) but no more than one camera should be used to videotape the lesson. Applicants may want to videotape other lessons prior to the "featured lesson" to put students at ease with the presence of the camera in the room. Applicants should keep the master tape and submit **two** copies with the application. The videotape should be submitted in standard VHS format and labeled with the following information:

Your Name, School, State, Date of Lesson, Grade Level of Students, and Topic of the Lesson.

B. Written Responses to the Videotaped Lesson

The applicant must provide the information requested in **Section II B**, referencing the item and/or sub-item being addressed. In preparing **Section II B** please address and identify items and sub-items in the order in which they are listed in the application.

All text must be double-spaced and should be on 8½ x 11-inch plain paper (one side only, portrait orientation) with at least a one-half-inch margin around the entire sheet of paper. Type size should be 12 point and should not exceed 14 characters per inch of text. Written responses to Section II B should not exceed eight pages. Pages should be numbered.

I. Context of the Featured Lesson

The **featured lesson** refers to the lesson captured on the video clip. The **instructional sequence** is not limited to the featured lesson but may include what preceded and followed the lesson.

- a. Indicate the number of students enrolled in this class and their grade level(s).
- b. Indicate the targeted mathematics or science concept(s), explicitly stating the National Standard or Benchmark addressed.
- c. Describe how this particular lesson contributes to students' attainment of the Standard or Benchmark.¹
- d. Describe your **plan** for instruction related to the targeted concept(s).
 - What instruction, related to the targeted concept(s), had the students experienced *prior* to this lesson?
 - What had the students understood and not understood about the targeted concept(s) as a result of these prior experiences?
 - What instruction, related to the targeted concept(s), did you intend the students to experience *during* the featured lesson?
 - What instruction, related to the targeted concept(s), did you intend the students to experience *after* the featured lesson?
 - How does this instructional sequence address the individual learning needs of your students?
- e. Describe your **plan** for assessment related to the targeted concept(s).

¹ Lessons aimed at developing student understanding of disciplinary content may have *other* goals as well, e.g., understanding scientific inquiry or learning mathematics problem solving strategies. If so, please describe.

- How did you plan to assess students' thinking and understanding of the targeted concept *throughout* this instructional sequence?
- How did you plan to assess students' thinking and understanding of the targeted concept *at the conclusion* of this instructional sequence?

2. Synopsis of the Lesson

Briefly describe each of the following segments of the featured lesson, including where each one can be found on the videotape, using standard time format 00:00 (minutes:seconds):

- a. How was the lesson introduced (00:00-00:00)?
- b. How were the concept(s) developed during the lesson (00:00-00:00)?
- c. How was the lesson concluded (00:00-00:00)?

3. Reflections on Your Instruction in the Featured Lesson

National teaching standards emphasize the importance of teachers being reflective practitioners, examining their current practice and looking for ways to improve student learning and their own knowledge and skills. The videotaped lesson serves both as evidence of your current practice and as a tool for reflection. Please view your videotaped lesson, recognizing that there is no such thing as a “perfect” lesson, and then respond to the following.

- a. What aspects of your instruction in the featured lesson worked particularly well?
- b. Choose a single 5-8 minute segment that shows you interacting effectively with students to help them develop conceptual understanding. Describe how you help students move their thinking forward. Use standard time format 00:00-00:00. **Students' voices should be audible. Please note that due to time constraints, the selection committee may not always be able to view the entire lesson on the videotape but in all cases will view the 5-8 minute segment that you selected.**
- c. Describe what changes, if any, you would make if you were to teach this lesson again and the reasons for these changes.
- d. Describe the ways in which this segment exemplifies your skill in the art of teaching.

4. Reflections on Student Work

Reflecting on the student sample you have chosen to include (**Section III** below), describe your appraisal of the student's mastery of the targeted concept(s). Address any features of student's misunderstanding/ understanding as evidence of your appraisal.

III. Sample of Student Work

Provide a **single** example of student work (individual or small group) generated during or as a result of this lesson. If the student work is displayed on 8½ x 11-inch paper, include a copy. Other forms of student work should be displayed separately at the end of the videotape. If such student work is captured on the videotape, the time markers (minutes:seconds) where the student work itself can be viewed should be provided.

IV. Background and Experience

The information requested in **Section IV** must be provided in a single-spaced **résumé format**, and must not exceed two pages.

Purpose: To demonstrate that the applicant has a strong and sustained commitment to teaching mathematics and/or science content, an educational foundation in the methods of teaching, and a five-year minimum of fulltime teaching in the classroom (prior to the 2004-2005 academic year).

A. Formal Education: Include institutions, dates, and degrees. If your degrees are not in mathematics or science, list the mathematics/science courses you have taken.

B. Teaching Experience: List school(s), teaching assignments, dates, and any other information that provides an accurate description of your teaching career.

C. Professional Development: Provide *examples* of professional development experiences in which you have participated over the last *five* years.

D. Professional Service: Include any leadership roles you have held, publications you have authored, or research you have conducted.

E. Awards, Grants, Professional Organizations: List any awards or grants you have received and professional organizations with which you are affiliated. List only those that you consider to be relevant to mathematics or science education.

V. Employment Confirmation

Provide a letter from your school principal confirming your fulltime employment. The letter, comprised of a few sentences, should be submitted on school stationery, signed and dated. It should indicate that you are in good standing and confirm that your teaching assignment makes you eligible for this award. Please refer to the eligibility criteria.

Criteria for Evidence of Quality Teaching

The following criteria will be used to evaluate your application. Please note that in cases where the content of the featured lesson is deemed unimportant or inaccurate, or where there is evidence of lack of respect for students, the application will not be considered further. *Please do **not** return this section with your application packet.*

Curriculum

1. Based on **national standards**, the mathematics/science content being addressed in the instructional sequence is important and accurate.
2. The mathematics/science content addressed in the instructional sequence is developmentally appropriate for the students in this class.
3. The instructional sequence, including the featured lesson, is coherent and appropriate for development of the targeted concept.
4. The instructional sequence provides appropriate learning opportunities for all students.

Instruction

5. The teacher demonstrates an understanding of the mathematics/science content addressed in the featured lesson.
6. The instructional strategies used are safe, appropriate for purposes of the lesson and provide access for all students.
7. The teacher demonstrates enthusiasm for teaching science/mathematics.
8. The teacher provides a welcoming and supportive environment in eliciting contributions from students.
9. The students are intellectually engaged with important mathematical/scientific ideas.
10. The teacher's communication skills and questioning strategies are likely to engage student thinking and enhance the development of student conceptual understanding/problem solving.

Assessment

11. The teacher demonstrates an awareness of student understanding of the targeted concept(s) in planning and implementing the lesson.
12. The teacher effectively uses multiple assessment methods and systematically gathers data about student understanding.
13. The teacher's comments on the student work sample demonstrate an awareness of the extent of student understanding exhibited by that student or small group.

Reflective Practitioner

14. The teacher's reflections demonstrate an awareness of the extent of student understanding developed in the lesson.
15. The teacher has a good understanding of the strengths and weaknesses of the instruction in the featured lesson.
16. The planned revisions to the featured lesson are likely to retain the key strengths and improve the weaknesses.

Professionalism and Leadership

17. The teacher possesses a strong academic background in mathematics/science appropriate to the students' grade level.
18. Participation in workshops, courses, and other educational opportunities, concerning both content and pedagogy specific to mathematics/science, has occurred during the past five years.
19. The teacher is engaged in planning, developing, and delivering activities at the building, local, or state level that affect the mathematics/science teaching strategies of his/her colleagues.
20. The teacher is professionally active.

School Data: Total Enrollment: Grades:
Check One: Public Private
Check One: Urban Suburban Rural

Indicate student population percentage:

American Indian or Alaskan Native Native Hawaiian or other Pacific Islander
Asian White
Black or African American More than One Race Reported
Hispanic or Latin American Do Not Know

Provide the following information about your principal/administrator:

Name: Title:
Institution Name:
Address:
City: State: Zip:
E-mail Address:

Provide the following information about your local superintendent or head of schools:

Name: Title:
School District:
Address:
City: State: Zip:

Applicant's Signature _____ **Date** _____

Completed applications, **postmarked by May 2, 2005**, must be submitted to your State Coordinator. For information on how to contact your State Coordinator, please visit the PAEMST web site at www.paemst.org.

Suggestions from State Coordinators

To assist you in completing the application, the state coordinators have provided some helpful suggestions.

Practical Suggestions:

- Record your featured lesson on a *new* videotape.
- Practice videotaping your classroom several times to help identify the technical problems involved in capturing a lesson on video. (For example, pull shades or close blinds to reduce glare and avoid backlighting.)
- Use a tripod whenever possible to help steady the camera.
- Pan the room slowly to show classroom environment.
- Capture teacher-student and student-student interactions, ensuring voices are audible.
- Make careful choices about your videotaped lesson—the setting and the activities should reflect your success in the classroom.

Things to Think About:

- How would you show your ability to spark your students' imaginations?
- How would you show your personality, passion and flair for teaching and learning?
- How would you show your belief that all students can learn?
- How would you show students engaged with important mathematics/science content?
- How would you incorporate some assessment in your featured lesson?

All questions regarding the application process must be directed to your State Coordinator and not to NSF program staff. For information on how to contact your State Coordinator, please visit the PAEMST website at www.paemst.org.

Instructions for Submission

In addition to your original application packet, please include **five** photocopies of the written portions of your application and two copies of the videotape. Staples and paper clips are acceptable. Please do not use folders, notebooks and report covers.

Videotapes submitted as part of the application process will be used throughout the PAEMST selection process (including review training) and could be used to promote excellence in science and math teaching.

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Please follow all instructions carefully, as deviations will result in disqualification.

PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

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; 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 applicant 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 needing information as part of the review process or in order to coordinate programs; 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 System of Records, NSF-50, "Principal Investigator/Proposal File and Associated Records," 63 Federal Register 268 (January 5, 1998), and NSF-51, "Reviewer/Proposal File and Associated Records," 63 Federal Register 268 (January 5, 1998). Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of your receiving an award.

Pursuant to 5 CFR 1320.5(b), an agency may not conduct or sponsor, and a person is not required to respond to an information collection unless it displays a valid OMB control number. The OMB control number for this collection is 3145-0058. 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 and any other aspect of this collection of information, including suggestions for reducing this burden, to: Suzanne Plimpton, Reports Clearance Officer, Information Dissemination Branch, Division of Administrative Services, National Science Foundation, Arlington, VA 22230, or to Office of Information and Regulatory Affairs of OMB, Attention: Desk Officer for National Science Foundation (3145-0058), 725 17th Street, N.W. Room 10235, Washington, D.C. 20503.

**INFORMATION ABOUT CANDIDATES FOR
PRESIDENTIAL AWARDS FOR EXCELLENCE IN MATHEMATICS AND SCIENCE TEACHING**

Submit ONE copy of this form with your application packet. Submission of this information is voluntary and is not a precondition of award. The information will not be disclosed to external peer reviewers. *THIS FORM SHOULD NOT BE ATTACHED TO ANY OTHER DOCUMENT IN YOUR APPLICATION PACKET AS THIS MAY COMPROMISE THE CONFIDENTIALITY OF THE INFORMATION.*

Candidate's Name:

Gender:	Male	Female
Ethnicity: (Choose one response)	Hispanic or Latino	Not Hispanic or Latino
Race: (Select one or more)	American Indian or Alaska Native Asian Black or African American Native Hawaiian or Other Pacific Islander White	
Disability Status: (Select one or more)	Hearing Impairment Visual Impairment Mobility/Orthopedic Impairment Other: None	
Citizenship: (Choose one)	U.S. Citizen Permanent Resident Other non-U.S. Citizen	

Check here if you do not wish to provide any or all of the above information (excluding Candidate's name):

Ethnicity Definition:

Hispanic or Latino. A person of Mexican, Puerto Rican, Cuban, South or Central American, or other Spanish culture or origin, regardless of race.

Race Definitions:

American Indian or Alaska Native. A person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment.

Asian. A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.

Black or African American. A person having origins in any of the black racial groups of Africa.

Native Hawaiian or Other Pacific Islander. A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

White. A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.

WHY THIS INFORMATION IS BEING REQUESTED:

The Federal Government has a continuing commitment to monitor the operation of its review and award processes to identify and address any inequities based on gender, race, ethnicity, or disability of its proposed candidates for Presidential Awards for Excellence in Mathematics and Science Teaching. To gather information needed for this important task, the candidate should submit a single copy of this form with his/her application materials. Submission of the requested information is voluntary and will not affect the candidate's eligibility for an award. However, information not submitted will seriously undermine the statistical validity, and therefore the usefulness, of information received from others. Any individual not wishing to submit some or all the information should check the box provided for this purpose. (The exception is the candidate's name.)

Collection of this information is authorized by the NSF Act of 1950, as amended, 42 U.S.C. 1861, et seq. Demographic data allows us to gauge whether our programs and other opportunities in science and technology are fairly reaching and benefiting everyone regardless of demographic category, and to ensure that those in under-represented groups have the same knowledge of and access to programs, meetings, vacancies, and other research and educational opportunities as everyone else. The information will be held closely. Information from the system may be merged with other computer files in order to carry out statistical studies. Disclosure may be made for this purpose to NSF contractors and collaborating researchers, other Government agencies, and qualified research institutions and their staffs. The results of such studies are statistical in nature and do not identify individuals. The information will be added to the NSF Fellowships and Other Awards File, which covers individuals applying or nominated for and/or receiving NSF support, either individually or through an academic institution, including fellowships or awards of various types. See System of Records, NSF-12, "Fellowships and Other Awards," 63 Federal Register 265 (January 5, 1998).

NSF Form I225 (10/99)

