U.S. DEPARTMENT OF EDUCATION

EXPERT PANEL ON
MATHEMATICS AND
SCIENCE EDUCATION

GUIDELINES AND MATERIALS FOR SUBMITTING

MATHEMATICS

PROGRAMS FOR REVIEW

- GUIDELINES
- INSTRUCTIONS
- EVALUATION CRITERIA
- SUBMISSION ATTACHMENTS

DEADLINE — JANUARY 30, 1998

Guidelines for Submitting Programs for Designation as Promising and Exemplary

Background and Purpose of the Expert Panel

The Educational Research, Development, Dissemination and Improvement Act of 1994 directed the Assistant Secretary of Educational Research and Improvement to establish "panels of appropriate qualified experts and practitioners" to evaluate educational programs and recommend to the Secretary those programs that should be designated as promising or exemplary. The Expert Panel on Mathematics and Science Education (the "Expert Panel") is the first of those panels. **The Expert Panel will review mathematics programs in the Winter of 1998; it will review science programs in the Fall of 1998.**

It is the purpose of the Expert Panel to oversee a valid and viable process for identifying and designating promising and exemplary programs in mathematics and science education so that practitioners can make better-informed decisions in their ongoing efforts to improve the quality of student learning in mathematics and science. Specific responsibilities of the Expert Panel include overseeing the entire review process; revising and fine-tuning the review process, as necessary; identifying, selecting, and training reviewers and review panels; making recommendations to the Secretary of Education for designating programs as promising and exemplary; and assuring that the broad and effective dissemination of information about designated promising and exemplary programs occurs.

Overview of the Review Process

Programs submitted to the Expert Panel will be reviewed first by two trained Quality Review Panels (QRP), each comprised of two reviewers. QRP reviewers will be drawn from a trained pool of qualified practitioners and researchers with content expertise and classroom teaching experience. QRPs will evaluate programs based on criteria that fall under three categories: (1) *Quality of Program*; (2) *Usefulness to Others*; and (3) *Educational Significance*. Programs that satisfy the criteria under these categories will be reviewed by an Impact Review Panel (IRP), which evaluates programs against a fourth category of criteria: *Evidence of Effectiveness and Success*. Designation of promising or exemplary status is explained in this fourth category. The IRP will be comprised of national experts in evaluation design and analysis.

The Expert Panel will review the evaluation scores of the QRPs and the IRP and determine which programs to recommend to the Secretary of Education as promising or exemplary. The Secretary will announce designated programs.

Recognition and Dissemination of Exemplary/Promising Programs

Programs designated as promising or exemplary by the Expert Panel will be fed into a larger system, the National Education Dissemination System, established by law to "create, validate, and disseminate to educators, parents and policy makers those educational programs that have potential or have been shown to improve educational opportunities for students." Other national, regional, and state school improvement systems, such as the Eisenhower Regional Mathematics and Science Education Consortia and other systemic initiatives, also will be used. Programs can benefit from the prestigiousness of this recognition through publicity and professional networking opportunities, including commendation by the Secretary of Education, potential invitations to present at professional conferences and in front of other educational audiences, and recognition in professional journals. Various funding opportunities also may arise from a program's designation as exemplary or promising.

What is a "Program" and Who is Eligible to Apply?

For the purposes of the Expert Panel's review process, a program is defined as: *a coordinated set of instructional activities and/or materials designed to enhance student learning. Programs should have the following characteristics:*

- *explicit learning goals;*
- *connected components that address these goals; and*
- *sufficient scope, duration, and importance to make a significant difference in student learning.*

Non-profit and commercial organizations are invited to submit programs to the Expert Panel. Submissions may come from a range of national, state or local developers. Comprehensive educational programs of six months or more of instructional duration with evidence of success are especially encouraged to apply.

How to Complete a Program Submission

Detailed instructions for completing a program submission are provided on the following pages. Please send **five** copies of the submission and relevant instructional materials or activities to the address below. If a program is designated as promising or exemplary, instructional materials will remain the property of the U.S. Department of Education to be used for later dissemination. If a program does not receive a designation, instructional materials will be returned to the submitter with feedback. Additional assistance regarding program submission can be obtained by contacting the address below.

Deadline for Submission

To be reviewed in Winter, 1998, mathematics programs must be received by: **Friday, January 30, 1998.** The next review cycle for mathematics programs will occur in two years (1999).

Please mail mathematics submissions to:

Expert Panel on Mathematics and Science Education Program Submission

c/o RMC Research Corporation
1000 Market Street
Portsmouth, New Hampshire 03801
Phone: (800) 258-0802
Fax: (603) 436-9166
e-mail: rmc@rmcres.com

Instructions for Completing a Program Submission

Please include the following information in your submission:

I. **Submission Cover Sheet**. Please complete Attachment A.

II. **Table of Contents and List of Materials**. Provide a table of contents for your submission materials and a list of all instructional materials (e.g., titles of textbooks or workbooks submitted) included in your submission. It is important to include overview materials (e.g., teacher's manual or activity summaries) and specific materials related to your stated learning goals (refer to Attachment B).

III. **Program Abstract**. Summarize briefly (250 words or less) basic information about your program, program goals, and the population served by the program.

IV. **Description and Background**. Describe briefly (maximum of 4 single-spaced pages):

I. Description of the Program -- its purposes, goals, philosophy and history, scope and duration, major components, funding and staffing requirements, and important, innovative, or unique strengths.

ii. Site Information and Demographics -- describe where and how the program has been used and by what types of users. Include ethnic, racial, and gender percentages. If possible, include the size of any special populations served (e.g., ESL, students with disabilities).

V. **List of Program Learning Goals**. Please complete Attachment B. Note relevant pages in supporting materials, when appropriate.

VI. **Meeting the Evaluation Criteria**. Please describe how your program meets the evaluation criteria presented in the next section. You must address **each** criterion to explain and justify the merit of your program. Use the indicators as guidelines in formulating a 1-2 page response for each criterion. Responses to the criteria should acknowledge the program's weaknesses, as well as strengths, and specify how you plan to address any perceived weaknesses. Please note relevant pages in supporting materials, when appropriate.

Responses to **Criteria 1 - 7** and responses to **Criterion 8** will be reviewed by separate review panels. As such, please separate your responses to Criteria 1 - 7 from your response to Criterion 8. Please do not exceed 15 pages to address Criteria 1 - 7; you may include as much material as necessary to address Criterion 8, especially summary reports of evaluation and statistical results and examples of surveys and other data collection instruments. *Please do not send raw data such as completed answer sheets or survey forms.*

Program submissions are judged against eight criteria, each with a number of indicators. The criteria are grouped into four categories: (A) Quality of Program, (B) Usefulness to Others, (C) Educational Significance, and (D) Evidence of Effectiveness and Success.

Review Procedures.

Step I: Identify and Cite Evidence: For each criterion, reviewers identify evidence from the submitted materials that illustrates how the program addresses each of the indicators. Sources are provided for each specific citing.

Step II: Criterion Rating: For ***Criteria 1-7***, QRP reviewers use the 5-point Rating Scale below to make a summary rating of the degree to which each criterion is met. Note that for ***Criterion 8***, IRP reviewers decide on whether to recommend the program as either promising or exemplary. All Criterion Ratings are based on the quality of the evidence identified in Step I.

Step III: Justification of Criterion Rating: Reviewers provide a justification for the Criterion Rating, based on the quality of the evidence identified in Step I and identify which indicators they may have weighted more heavily than others.

RATING SCALE FOR CRITERIA 1 - 7

The following scale is used to indicate the degree to which each criterion is met.

The criterion is met:

5.....exceptionally
4.....strongly
3.....adequately
2.....inadequately
1.....not at all

Evaluation Criteria

Your program will be evaluated against the following eight criteria. Each criterion is followed by a number of indicators: **your submission must address each criterion**. Use the indicators as guidelines. If a certain indicator does not apply, please note.

A. Quality of Program

Criterion 1. ***The program's learning goals are challenging, clear, and appropriate for the intended student population.***

Indicator a. The program's learning goals are explicit and clearly stated.

Indicator b. The program's learning goals are consistent with research on teaching and learning or with identified successful practices.

Indicator c. The program's learning goals foster the development of skills, knowledge, and understandings.

Indicator d. The program's learning goals include important concepts within the subject area.

Indicator e. The program's learning goals can be met with appropriate hard work and persistence.

Criterion 2. ***The program's content is aligned with its learning goals, and is accurate and appropriate for the intended student population.***

Indicator a. The program's content is aligned with its learning goals.

Indicator b. The program's content emphasizes depth of understanding, rather than breadth of coverage.

Indicator c. The program's content reflects the nature of the field and the thinking that mathematicians use.

Indicator d. The program's content makes connections within the subject area and between disciplines.

Indicator e. The program's content is culturally and ethnically sensitive, free of bias, and reflects diverse participation and diverse student interests.

Criterion 3. ***The program's instructional design is appropriate, engaging, and motivating for the intended student population.***

Indicator a. The program's instructional design provides students with a relevant rationale for learning this material.

Indicator b. The program's instructional design attends to students' prior knowledge and commonly held conceptions.

Indicator c. The program's instructional design fosters the use and application of skills, knowledge, and understandings.

Indicator d. The program's instructional design is engaging and promotes learning.

Indicator e. The program's instructional design promotes student collaboration, discourse, and reflection.

Indicator f. The program's instructional design promotes multiple and effective approaches to learning.

Indicator g. The program's instructional design provides for diverse interests.

Criterion 4. ***The program's system of assessment is appropriate and designed to inform student learning and to guide teachers' instructional decisions.***

Indicator a. The program's system of assessment is an integral part of instruction.

Indicator b. The program's system of assessment is consistent with the content, goals, and instructional design of the program.

Indicator c. The program's system of assessment encourages multiple approaches and makes use of diverse forms and methods of assessment.

Indicator d. The program's system of assessment probes students' abilities to demonstrate depth, flexibility, and application of learning.

Indicator e. The program's system of assessment provides information on students' progress and learning needs.

Indicator f. The program's system of assessment helps teachers select or modify activities to meet learning needs.

B. Usefulness to Others

Criterion 5. ***The program can be successfully implemented, adopted, or adapted in multiple educational settings.***

Indicator a. The program provides clear instructions and sufficient training materials to ensure use by those not in the original program.

Indicator b. The program is likely to be successfully transferred to other settings.

Indicator c. The program specifies the conditions and resources needed for implementation.

Indicator d. The program's costs (time and money) can be justified by the benefits.

C. Educational Significance

Criterion 6. ***The program's learning goals reflect the vision promoted in national standards in mathematics education.***

Indicator a. The program's learning goals and subject matter content are consistent with national standards.

Indicator b. The program's pedagogy and assessment are aligned with national standards.

Indicator c. The program promotes equity and equal access to knowledge, as reflected in national standards.

Criterion 7. ***The program addresses important individual and societal needs.***

Indicator a. The program is of sufficient scope and importance to make a significant difference in student learning.

Indicator b. The program contributes to increases in teachers' knowledge of effective teaching and learning.

Indicator c. The program:

- is designed to improve learning for a wide spectrum of students *OR*
- serves to meet the special learning needs of under-served students *OR*
- serves to meet the special learning needs of students whose interests and talents go beyond core mathematics education.

D. Evidence of Effectiveness and Success

Criterion 8. ***The program makes a measurable difference in student learning.***

Promising Programs, in addition to satisfying Criteria 1–7, must provide **preliminary** evidence of effectiveness in **one or more sites** for **at least one** of the indicators below:

Indicator a. The program has evidence of gains in student understanding of mathematics.

Indicator b. The program has evidence of gains in inquiry, reasoning, and problem solving skills.

Indicator c. The program has evidence of improvements in course enrollments, graduation rates, and post-secondary school attendance.

Indicator d. The program has evidence of improvements in attitudes toward learning.

Indicator e. The program has evidence of narrowing the gap in achievement or accomplishment between disaggregated groups.

Indicator f. The program has other evidence of effectiveness or success.

Exemplary Programs, in addition to satisfying Criteria 1–7, must provide **convincing** evidence of effectiveness in **multiple sites with multiple populations** regarding **two or more** of the indicators below. The items must include either both indicators from Part I or one indicator from Part I and one indicator from Part II. Providing evidence of two indicators from Part II is not sufficient.

Part I

Indicator a. The program has evidence of gains in student understanding of mathematics.

Indicator b. The program has evidence of gains in inquiry, reasoning, and problem solving skills.

Part II

Indicator c. The program has evidence of improvements in course enrollments, graduation rates, and post-secondary school attendance.

Indicator d. The program has evidence of improvements in attitudes toward learning.

Indicator e. The program has evidence of narrowing the gap in achievement or accomplishment between disaggregated groups.

Indicator f. The program has other evidence of effectiveness or success.

Attachment A:
Submission Cover Sheet

A. Program Information

1. Title of Program

_____

_____

_____

_____

_____

_____

2. Please describe the specific topics/strands in mathematics that this program covers:

_____

_____

_____

_____

_____

_____

3. Please describe the population and grade levels this program has served:

_____

_____

_____

_____

_____

_____

B. Contact Information

Name of Applicant:_____

Organization/Affiliation:_____

Address: _____

_____

_____

_____

Telephone:_____

Fax:_____

E-mail:_____

WWW Home Page:_____

Applicant's involvement with program (please check one):

❑ Author/Developer ❑ Publisher ❑ Evaluator ❑ User

Program Developer (if not the applicant):

_____

Program Publisher (if not the applicant):

_____

If this program is copyrighted, who holds the copyright?

_____

C. Certification of Accuracy and Completeness

Please certify that the information provided in this submission is true, accurate, and complete. Submissions should acknowledge strengths and weaknesses of the program. Also, if more than one evaluation has been conducted, evidence from all evaluations should be provided, not just those with the best results.

I certify that the information provided in this submission is true, accurate, and complete.

Signature:_____ Date:_____

Program Submitter

Attachment B:
Program Learning Goals

1. On the next page, identify the program's significant learning goals. (Attach a second page, if required.)

2. Indicate which ONE learning goal you wish reviewers to focus on in their review. Reviewers will review a second (and, perhaps, third) learning goal, randomly selected from this list.

For this process, **learning goals are defined as statements of student understanding that the program seeks to attain for which specific evidence is provided**. The specificity of the learning goals will necessarily vary based on the scope of the program. Submitters are encouraged to refer to state and national standards documents (such as the NCTM Curriculum and Evaluation Standards for School Mathematics and Project 2061 Benchmarks for Science Literacy) for guidance in identifying their learning goals.

Examples of learning goals that are **appropriate** for this submission include:

- students will use and compare numbers in a variety of forms, including fractions and decimals
- students will demonstrate the ability to apply probability and statistics for representing and interpreting data, and communicate results using technologies, when needed
- any actual NCTM standard, actual NSES standard, or Project 2061 benchmark

Examples of learning goals that are **not appropriate** for this submission include:

- instruction that engages students in exploration of mathematical concepts
- ensuring success for all students
- providing mathematics that meet the NCTM standards

Learning Goals

Number and list as many learning goals as apply to your submission (add pages if necessary):

Review Teams should focus on the following learning goal in their review:

U.S. DEPARTMENT OF EDUCATION
OFFICE OF EDUCATIONAL RESEARCH AND IMPROVEMENT
555 NEW JERSEY AVENUE, N.W. SUITE 500
WASHINGTON, DC 20208
http://www.ed.gov