

**Mathematics and Science
Partnerships (MSP) Program
(Title II, Part B)**

**Grant Application for
2012 – 2013**

Current MSP projects only are eligible to apply.

Deadline for Applications: February 15, 2012

**Vermont K-12
Mathematics & Science**



**Standards & Assessment
(802) 828-0196**

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APPLICATION INSTRUCTIONS FOR INSTITUTIONS OF HIGHER EDUCATION, SCHOOL DISTRICTS, AND NONPROFIT ORGANIZATIONS SEEKING A MATHEMATICS AND SCIENCE PARTNERSHIPS GRANT

Title II, Part B of NCLB authorizes a Mathematics and Science Partnerships (MSP) program. MSP is intended to increase the academic achievement of students in mathematics and science by enhancing the content knowledge and teaching skills of classroom teachers. Partnerships between high-need school districts and the science, technology, engineering, and mathematics (STEM) faculty in institutions of higher education are at the core of these improvement efforts. Other partners may include public charter schools or other public schools, businesses, and nonprofit or for-profit organizations concerned with mathematics and science education.

Vermont needs to establish a professional development system that improves the content knowledge of teachers of mathematics and science in order to improve classroom instruction and student learning. In addition, Vermont needs to build its regional capacity for professional development of K-12 staff by establishing networks of highly skilled teacher leaders in mathematics and science who will work within their LEA and within their region, to provide professional development to other mathematics and science teachers.

Vermont Department of Education (VTDOE) is responsible for the administration of this program. Funds available for the Mathematics and Science Partnership competitive grant program will be awarded by the VTDOE to support applications submitted by eligible partnerships.

I. Program Description

A. Purpose: The *Mathematics and Science Partnership* program is a formula grant program to states that supports improved student achievement in mathematics and science through enhanced training for mathematics and science teachers. The states are responsible for conducting a competitive grant program that makes awards to partnerships of high-need school districts and science, mathematics, and engineering departments within higher education, giving arts and science faculty and districts joint responsibility for improving mathematics and science instruction.

MSP seeks ways to sustain intensive, high-quality professional development activities that focus on deepening teachers' content knowledge. It is also aimed at increasing knowledge of how students learn particular content, providing engaging learning opportunities, and establishing coherence in teachers' professional development experiences.

B. Vermont Department of Education Priority:

The MSP grant program will support projects to:

- **Increase the subject matter knowledge and teaching skills of STEM educators.** Projects will bring together educators with scientists, mathematicians, engineers, and instructional leaders to expand teachers' subject matter knowledge of mathematics and/or science as well as their ability to provide diagnostic interventions for students. Projects will include *two weeks or the equivalent of rigorous content institutes* that directly relate to the mathematics and/or science underlying the K-12 curriculum and enhance the ability of teachers to implement *Vermont's Grade Expectations for Mathematics and Science and, when appropriate, the Common Core State Standards for Mathematics and English Language Arts.*

- At least one distance learning course will be included among the professional development opportunities for teachers. For instance, this course could be delivered through interactive television or the Learning Network of Vermont (LNV). An online course or a hybrid, with some face-to-face meetings, could also meet this requirement.
- **Develop teachers’ ability to frequently monitor the learning of all students and adjust instruction to better meet their needs.** Partnerships will be required to articulate a process for developing teachers’ understanding and use of formative assessment practices. This component needs to provide teachers with professional development focused on gathering evidence of learning in the classroom and adapting teaching to meet the needs of students.
- **Demonstrate how technology can be used as a tool within STEM instruction to gather, manipulate, and explore data.** Projects will provide opportunities for teachers to become fluent in the use of technology that promotes meaningful learning experiences by incorporating technology as a tool for instruction that can then be translated into classroom practice. Projects should strive to utilize current web-based applications to enrich collaboration and communication in a variety of ways.
- **Incorporate key elements of effective professional development as defined in *Standards for Professional Development by Learning Forward*.** Projects should help to foster a professional development system that encourages collective responsibility for improved student learning through job embedded professional development that occurs regularly over a period of time. Clear learning goals for teachers that are attained through implementation of coherent, sustained, and evidence-based learning opportunities are essential. For additional information, please go to: <http://www.learningforward.org/standards/index.cfm>.

C. Project Awards:

Category	Grant Duration	Number of Awards	Maximum Amount of Each Grant Award
Grades K-12 Mathematics, Science, or STEM Professional Development	1 Year*	Up to three	Up to \$200,000 /year

* Funding for additional years may be a possibility depending upon the effectiveness of the project as well as the continuation of federal funding.

II. MSP Project Requirements

A. Partnerships (20 Points): MSP projects are designed and implemented by partnerships that include **K-12 administrators and faculty or a segment of that population (e.g., K-8, 9-12, and/or Career Technical Center), with STEM Higher Ed faculty.** Other partners are encouraged and may include Educational Service Agencies, businesses, informal education centers (e.g., museums and nature centers), and teacher training departments of an institution of higher education. These partners and other stakeholders engage in the effort at both the

institutional and individual levels, and share goals, responsibilities and accountability for the project. Any member of the partnership may be designated as the fiscal agent as long as the member has the capacity and experience to manage the financial requirements of the grant. For the purposes of this grant program, a partnership is defined as follows: ***A K-16 partnership is an organization (i.e., a social entity in which people routinely engage together in tasks) that is formed through a formalized agreement among partners, comprising at least one actively engaged college/university and one actively-engaged elementary, middle school, high school, career technical center, or supervisory union and is intended to accomplish mutual benefits that the partners, alone, could not accomplish.***¹

A partnership must:

- Identify shared goals and clearly describe the mutual benefits that will be derived by each of the members by participating in the partnership activities. *For example, as STEM faculty assist high school teachers in enhancing their mathematics and/or science content expertise, the higher education faculty might benefit by incorporating formative assessment practices into their own teaching.*
- Establish a formal agreement that ensures cross-organizational membership and interdependent work routines.
- Provide evidence of the commitment of all partnership members to the achievement of partnership goals.
- Describe the partnership's governance structure specific to decision-making, communication, and fiscal responsibilities.
- Explain how teachers will be recruited for this project and provide a timeline for the recruitment process.

Note: Projects are strongly encouraged to include informal education centers as partners, whenever feasible, in order to take advantage of the unique learning opportunities they provide and build capacity to meet the needs of Vermont educators.

B. Needs Assessment: The project's partnership shall include high-needs schools and/or districts according to the following priorities:

1. Schools with a significant mathematics and/or science achievement gap associated with poverty.
2. Schools and/or districts that have a high percentage of students in poverty.
3. Schools and/or districts that have been identified as not having met Adequate Yearly Progress (AYP) or have entered School Improvement.
4. Teacher quality and professional development needs with respect to the teaching and learning of mathematics and/or science.

C. Teacher Outcomes: Projects shall provide professional development in the deep mathematical and scientific content teachers require in order to respond to the learning needs of students.

¹ K-20 Partnership: A Definition and Proof-of-Concept, Clifford, M and Millar, S. May 9, 2007

Deep mathematical and scientific content includes:

- Understanding of the enduring knowledge associated with the *Vermont Grade Expectations for Mathematics and Science as well as the Common Core State Standards* and the common misconceptions that children hold in regards to fundamental mathematics and science concepts.
- Understanding of mathematics and science as a way of thinking by engaging in mathematical and scientific inquiry and problem solving.
- Understanding the use of formative assessment practices in determining whether instruction has been effective in improving student learning and in determining the next step in the teaching of a particular concept.

D. Professional Development Model: Projects will bring together classroom teachers with scientists, mathematicians, engineers, and instructional leaders to improve mathematics and/or science content knowledge and instructional practice among K-12 teachers. Professional development will include research that clarifies the importance of identifying student misconceptions through the use of formative assessment practices. An understanding of formative assessment practices (Appendix E) should increase teachers' ability to monitor student understanding and make appropriate adjustments to instruction. Projects must also provide teachers with a clear connection between fundamental mathematics and science content and the *Vermont Grade Expectations for Mathematics and Science as well as the Common Core State Standards*.

The activities to be carried out by the partnership shall be based on a review of scientifically based research. An explanation of how the activities expect to improve student academic achievement and strengthen the quality of mathematics and science instruction shall be included.

Activities shall include two weeks or the equivalent (80 hours) of content institutes that foster an understanding of the essential mathematics and/or science content required to teach to higher standards and improve student performance in meeting the *Grade Expectations in Mathematics and/or Science as well as the Common Core State Standards*.

Activities shall provide a focused leadership component for teachers as well as the principals and administrators who support, supervise, and evaluate the program participants.

E. Evaluation: Each eligible partnership receiving a sub-grant shall develop an evaluation and accountability plan for activities of the project that include a rigorous measurement of the impact of the project activities. Measurable objectives must include the degree to which the activities of the project affected the Teacher Outcomes described in II C and Student Performance in Mathematics or Science. **Pre- and post-test teacher data** is a required component of the evaluation. The partnership shall submit an **annual report** to the Secretary, United States Department of Education, regarding progress in meeting the objectives. Projects should budget approximately 15% of the grant funding for evaluation.

Priority will be given to MSP projects that build a Comparison-Group Study Design into the design of the project, in order to rigorously evaluate its effectiveness. Applicants can download a User-Friendly Guide for MSP Project Officials and Evaluators from the U.S. Education Department's Web site (<http://www.ed.gov/programs/mathsci/resources.html>).

III. Application Requirements: Only current MSP Projects can apply for this grant cycle.

The narrative sections (excluding appendices) of the application must be double-spaced and the font used must not be smaller than 12-point and **shall not exceed 15 pages**. Applications must contain the following sections:

A. Cover Page (Appendix A) and Assurances (Appendix B).

B. Abstract: Provide a one-page summary that briefly describes the project vision, goals, activities, and key features that will be addressed and expected benefits of the work. This page may be single-spaced.

C. Program Narrative: The project narrative shall describe in detail how the project plan will address each component of the MSP Project Requirements from section III (Partnership, Needs Assessment, Teacher Outcomes, Professional Development Model, and Evaluation). The project narrative shall also include a project timeline and must clearly demonstrate that the submitting team has the capability of managing the project, organizing the work, and meeting deadlines.

D. Budget Justification: The budget justification should clearly be tied to the scope and requirements of the project. The budget narrative should describe the basis for determining the amounts shown on the project budget page and include a budget (Appendix C). All applications should provide a provision for evaluation of the activities in an annual performance report.

E. Appendix: The appendix should include:

Partnership Agreements: This section shall include a narrative of the roles of the partners and their duties and responsibilities related to the goals and objectives of the project. This section shall also describe the partnership's governance structure specific to decision-making, communication, and fiscal responsibilities. In addition to this narrative section, each application must append:

- A Partner Identification Form for each partner (Appendix D);
- A letter of commitment from each partner outlining the role and contributions of the partner and providing evidence that the proposed partnership activities are integral to the partner's instructional plans.

IV. Application Submission and Review

A. Submission: Applicants must submit an original and four copies of the full application to the Department. The original must include an original signature of the authorized institutional official on the cover page. Fax and e-mail transmissions are not acceptable. To be considered for funding, applications must be received at the Department by 4:00 pm on February 15, 2012. Incomplete applications will not be considered. Applications should be mailed or delivered to:

**Pat Fitzsimmons
MSP Program Director
Vermont Department of Education
120 State Street
Montpelier, VT 05620-2501**

B. Review Process: Applications will be reviewed by staff for completeness and compliance with the requirements set forth in Title II, Part B of NCLB to determine applicant eligibility. Any questions about significant omissions from an application or about applicants' eligibility will be referred to the proposing organization. If, in the judgment of the Department, an application is late, significantly incomplete, or an applicant cannot establish its eligibility, the application will be omitted from the competition. The decision of the Department is final. Applicants submitting applications that are withdrawn due to incompleteness or ineligibility will be notified in writing.

An expert review panel will evaluate eligible applications in light of the required application components and the established criteria (Appendix F). The panel will evaluate each eligible application and make recommendations to the Department. Consideration based upon the following criteria: final score assigned each application by the review panel; a cost-effectiveness ratio determined by the relationship between the number of teachers served, the actual amount of teacher-faculty instructional contact time, and the total cost of the program; and geographic distribution.

Following the review, the Department staff will contact selected Project Directors to discuss any modifications of the project plan that may be required. In order to maximize the effects of limited funds, applicants whose grants are recommended at less than the amount requested may be asked to revise the project budget and/or scope of work.

C. Review Criteria

Criteria	Points
Commitment and Capacity of Partnership	30
Demonstration of Need	15
Efficacy of Professional Development Model	25
Evaluation Plan	15
Budget and Cost Effectiveness	15

The Department reserves the right to award in part, to reject any and all applications in whole or in part, and to waive technical defects, irregularities or omissions if, in its judgment, the best interest of the students would be served. After receiving the grant application, the Department reserves the right not to award all grants, to negotiate specific grant amounts, and to select certain grantees regardless of points awarded as part of the evaluation process to meet federal requirements or State Board of Education priorities. In addition, the Department reserves the right to change the dollar amount of the grant award to meet federal guidelines for grant awards.

Applicants may be asked to clarify or rewrite certain aspects of their applications. Finalists may be asked to participate in an oral interview or receive an onsite visit before funds are awarded. Applicants will be contacted if such information or actions are necessary.

The award is subject to availability of federal or state funds. The grantee will be required to sign a grant contract with the Vermont Department of Education.

VI. Award Administration

A. Notification of the Award: Within thirty days of completion of the review process, the Project Director will be notified of the status of their application.

B. Award Conditions: Applicants should note that the possibility of funding for additional years is contingent upon this program receiving funding through the U.S. Department of Education and upon the State’s evaluation of the funded programs.

C. Reporting Requirements: Each eligible partnership receiving a grant must report annually to the Department and to the U.S. Secretary of Education regarding the eligible partnership’s progress in meeting the objectives and annual targets described in the partnership’s accountability plan. Further information regarding reporting requirements and forms will be made available to the Project Director.

D. Timeline

Timeline for Math Science Partnership Grants	
Application Release	November 22, 2011
Submission Deadline (Received in VT DOE)	February 15, 2012
Award Announcements	March 15, 2012
Project Implementation	July 1, 2012-June 30, 2013

Appendix A

Title II, Part B Mathematics and Science Partnerships

**Application for 2012-2013
Mathematics and Science Partnerships Grant**

Applying Institution or Organization: _____

Program Title: _____

Program Director

Name: _____

Title: _____

Address: _____

Telephone: _____ **Fax:** _____

E- Mail: _____

Amount of MSP Funds Requested: \$ _____

Estimated Number of Teachers to be Served: _____

Certification by Authorized or Institutional Official:

The applicant certifies that to the best of his/her knowledge the information in this application is correct, that the filing of this application is duly authorized by the governing body of this organization, or institution, and that the applicant will comply with the attached statement of assurances.

Typed or Printed Name of Authorized Official

Title

Signature of Authorized Official

Date

Appendix B

Title II, Part B Mathematics and Science Partnerships

Statement of Assurances

Should an award of funds from the Mathematics and Science Partnership Program be made to the applicant in support of the activities proposed in this application, the authorized signature on the cover page of this application certifies to the Vermont Department of Education that the authorized official will:

1. Upon request, provide the Vermont Department of Education with access to records and other sources of information that may be necessary to determine compliance with appropriate federal and state laws and regulations;
2. Conduct educational activities funded by this project in compliance with the following federal laws:
 - a. Title VI of the Civil Rights Act of 1964
 - b. Title IX of the Education Amendments of 1972
 - c. Section 504 of the Rehabilitation Act of 1973
 - d. Age Discrimination Act of 1975
 - e. Americans with Disabilities Act of 1990
 - f. No Child Left Behind of 2001
3. Use grant funds to **supplement and not supplant** funds from nonfederal sources;
4. Take into account during the development of programming the need for greater access to and participation in the targeted disciplines by students from historically under represented and under-served groups; and
5. Submit, in accordance with stated guidelines and deadlines, all program and evaluation reports required by the U.S. Department of Education and the Vermont Department of Education.

Appendix C

Title II, Part B Mathematics and Science Partnerships

Partnership Project Budget

Partnership Funding Request

Program Title:

A. Direct Cost Requested for Partner	YR 1
1. Salaries & Wages (Professional and Clerical)	
2. Employee Benefits	
3. Travel	
4. Materials and Supplies	
5. Consultants and Contracts	
6. Teacher Stipends	
7. Equipment (Purchase)	
8. Other (Equipment rental, printing, etc.)	
9. Evaluation	
B. Indirect Costs* (if appropriate)	
Total	

* The indirect cost rate shall not exceed 8%.

This form is a required element of the grant application. Justification for each of the categories shall be included in the budget narrative portion of the application. For reporting, you must include an itemized breakdown of these budget categories and a budget narrative explaining how you calculated each line item and the actual total project cost share.

Appendix D

Title II, Part B Mathematics and Science Partnerships

Partnership Identification Form

Include a Partnership Identification form for each of the partner institutions/organizations.

PARTNER INSTITUTION: _____

Primary Contact

Name: _____

Title: _____

Address: _____

Telephone: _____ **Fax:** _____

E- Mail: _____

Type of Institution/Organization: _____

Appendix E

Title II, Part B Mathematics and Science Partnerships

Formative Assessment Practices Requirements

The purpose of the formative assessment practices component is to develop greater capacity for teachers to frequently monitor the learning of all students and adjust instruction to better meet their needs. Educators should also gain a common understanding of the research and strategies that define formative assessment practices as assessment for learning.

Teachers will understand:

- the value of formative assessment practices for improving outcomes for learners;
- how to implement strategies for gathering evidence of learning; and
- how to adapt teaching to meet student learning needs.

Appendix G

Title II, Part B Mathematics and Science Partnerships

Definitions - The following definitions are based on the definitions included in the *No Child Left Behind Act of 2001*.

- A. **Highly Qualified Teacher:** Include here the State Definition of Highly Qualified Teacher (Example: The term “highly qualified teacher” means the teacher has not had certification or licensure requirements waived on an emergency, temporary, or provisional basis. The teacher has obtained full state certification as a teacher or passed the state teacher licensing examination and holds a license to teach in such state.)

- B. **Professional Development:** The term “professional development” means instructional activities that:
 - (1) Are based on scientifically based research and state academic content standards, student academic achievement standards, and assessment;
 - (2) Improve and increase teachers’ knowledge of the academic subjects they teach;
 - (3) Enable teachers to become highly qualified; and
 - (4) Are sustained, intensive, and classroom-focused in order to have a positive and lasting impact on classroom instruction and the teachers’ performance in the classroom.

- C. **Scientifically Based Research:** The term “scientifically based research” means research that involves the application of rigorous, systematic, and objective procedures to obtain reliable and valid knowledge relevant to education activities and programs and includes research that:
 - (1) Employs systematic, empirical methods that draw on observation or experiment and involve rigorous data analyses that are adequate to test the stated hypotheses and justify the general conclusions drawn;
 - (2) Relies on measurements or observational methods that provide reliable and valid data across evaluators and observers, across multiple measurements and observations, and across studies by the same or different investigators;
 - (3) Is evaluated using experimental or quasi-experimental designs in which individuals, entities, programs, or activities are assigned to different conditions, with appropriate controls to evaluate the effects of the condition of interest and with a preference for random-assignment experiments or other designs to the extent that those designs contain within-condition or across-condition controls;
 - (4) Ensures that experimental studies are presented in sufficient detail and clarity to allow for replication or, at minimum, to offer the opportunity to build systematically on their findings; and
 - (5) Has been accepted by a peer-reviewed journal or approved by a panel of independent experts through a comparably rigorous, objective, and scientific review.

D. High-Need School District: The term “high-need school district” means a school district that meets one or more of the following criteria:

- (1) That serves no fewer than 10,000 children from families with incomes below the poverty line or a school district for which 20 percent of the children are from families with incomes below the poverty line;
- (2) That have a high percentage of teachers not teaching in the academic subjects or grade levels that the teachers were trained to teach or that have a high percentage of teachers with emergency, provisional, or temporary certification or licensing; and
- (3) That did not meet the LEA Student Performance Targets (AYP) in science.