

North Carolina Department of Public Instruction
APPLICATION PACKAGE
No Child Left Behind Act of 2001
Public Law 107-110
Title II, Part B

Mathematics and Science
Partnerships (MSP) Program

Request for Proposals
To Design and Deliver Professional Development for
Mathematics and Science
2010-2011 Awards

Deadline for Applications: January 22, 2010

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**North Carolina Department of Public Instruction
Request for Proposals
Mathematics and Science Partnership (MSP)
2010-2011 Awards**

What is the Mathematics and Science Partnership Grant?

When the *No Child Left Behind Act of 2001* became law in 2002, a section of the Act allocated money to each state to improve its mathematics and science education. North Carolina has been allotted approximately \$4,929,358 for fiscal year 2010-2011 to support projects already funded and to begin new three-year Mathematics and Science Partnership (MSP) grants. Up to four new grants will be funded. The goal of these grants is to improve the mathematics and science knowledge of North Carolina students in high-need school districts by providing professional-development activities to their mathematics and science teachers. The funding available is targeted to improve mathematics and/or science instruction in elementary, middle, and high schools. Grants will be awarded on a competitive basis, with grant awards ranging between \$3000 and \$7000 per teacher receiving at least 80 hours of professional development during the three-year period. Grants will be funded for one year and renewed annually, depending upon satisfactory progress toward meeting established goals and continued funding from the United States Department of Education. Funds must be used to supplement, not supplant, funds that would otherwise be used for proposed activities. The North Carolina Department of Public Instruction (NCDPI) is responsible for administering this program and for determining funding recipients. All funding for this program is contingent upon continued funding from the federal government. The deadline to apply for a grant is **January 22, 2010**.

Eligibility

This grant is intended to serve mathematics and science teachers from high-need school districts. See *Appendix A* for information on “high need” designation. Districts must conduct a needs assessment and justify need for the mathematics and/or science professional development outlined in the grant proposal. All teachers who teach mathematics and/or science, including teachers of students with disabilities (SWD) and teachers of English Language Learners (ELL) who teach mathematics and science are eligible to be included.

This is a “partnership” grant. One “partner” must be a Local Education Agency (LEA). The second required “partner” must be an engineering, mathematics, or science department of an institution of higher education (IHE). These two partners are mandatory. A partnership may also include any of the following as *additional* partners:

- Another engineering, mathematics, science, or education department of an institution of higher education.
- Additional local educational agencies, public charter schools, public or private schools or a consortium of such schools.

- A business or organization that has shown it can improve the quality of mathematics and science instruction.

A project with a statewide focus still needs an LEA to act as fiscal agent and at least **four** additional LEA partners. The project with a statewide focus must also include an engineering, mathematics or science department of an institution of higher education.

No matter who is included in the partnership, the local education agency (first partner listed previously) will be the fiscal agent for the grant. The management structure of the partnership must reflect the proposed roles of the various partners.

How the Grant May Be Used

The ultimate goal of this grant is to improve the mathematics and science knowledge of North Carolina students in high-need school districts. These goals are to be accomplished by improving the mathematics and science content knowledge of teachers in high-need districts and by developing closer partnerships between these districts and IHE engineering, mathematics and science departments. An additional goal of these grants is to investigate professional development models to provide a research base for future professional development efforts.

Institutions of higher education partners will be expected to provide professional development to help project teachers improve their mathematics and science content knowledge and teaching skills. The project should also be structured to develop relationships between the STEM faculty and the teachers served in the project as well as institutional relationships between the IHE departments and the LEA(s). Activities proposed should be consistent with the needs of the targeted teachers. **STEM faculty from the IHE partner must directly lead some or all of the professional development sessions.** STEM faculty may be paired with teacher education faculty or master teachers; however, they must directly lead professional development in MSP grants.

The partnerships are expected to be sustainable. A sustainable partnership does not necessarily mean that the same project activities will continue after the end of the funding period, but there should be indicators of sustained change, such as new courses that have been developed, increased IHE faculty knowledge of the *North Carolina Standard Course of Study* and involvement with K-12 schools, and increased K-12 faculty use of IHE resources.

How to Apply

The following proposal format has been prepared by NCDPI as a comprehensive proposal framework to be used by all partnerships in preparing a MSP proposal for funding consideration. The proposal framework is designed to show a logical sequence of activities and planning beginning with the creation of a partnership then determining the needs of teachers, establishing measurable objectives, an implementation plan, how the project will be managed, how the project will be evaluated and finally a budget to support project implementation. All proposals must include the following components, presented in the sequence specified below.

- I. TITLE PAGE and DEPARTMENT FORM (Use the forms found in Appendix B (parts 1 and 2) of this RFP)

II. PROJECT ABSTRACT

All partnerships must provide a **1-page, single-spaced** abstract of the proposal that briefly and concisely describes the program to be implemented and summarizes the intended results of the program. It should identify the project partners, the focus area described in this RFP, the number of teachers it intends to serve, the academic/instructional need(s) of teachers to be impacted, the partnership goals, and a brief overview of the work plan and evaluation plan.

III. NARRATIVE: (in the following order)

A) Evidence of Meaningful Partnerships

This section describes the partnership submitting this proposal and how it was developed. Provide evidence of active planning and involvement of all partners prior to proposal submission, including dates and locations of meetings, names of individuals representing the partners, and description of activities carried out in preparing this proposal.

Distinguish between “primary” partners and “supporting” partners. Primary partners are those partners – including at least one IHE and one high-need school district – that are engaged in implementing the project and are accountable for its outcomes. Supporting partners are other entities that provide particular resources or services in the project, but are not directly involved in the project’s operation (examples might include a science center hosting a field trip for participants, or a business providing materials for project activities).

B) Results of Needs Assessment

This section describes the specific need(s) for teachers’ professional development that will be addressed by the project. The needs described should include (but need not be limited to) specific gaps or weaknesses in teacher content knowledge that the project will target. The existence of the needs must be based on quantitative and/or qualitative information gathered within the past two academic years in the partner school systems (do not rely solely on information from national or international reports). Identify the methods used by the partnership to determine professional development needs of teachers in each partner school system. Examples of needs assessment data might include EOG/EOC data analyzed to show specific content gaps, information on teachers’ content preparation and background, data on teachers’ practices, and responses to surveys about desired professional development.

C) Project Objectives

This section describes the impact that the project will have on its participating teachers. All projects must list specific, measurable objectives that address the following four goals: 1) Increasing teacher content knowledge; 2) Increasing student achievement; 3) Improving classroom instruction; and 4) Developing a sustainable partnership. Additional goals beyond these may be listed, along with measurable objectives, but are not required. The project objectives must align with and specifically address the needs identified in Section III.B above. Note that objectives are written in terms of measurable participant

outcomes, *not* completion of project activities. Objectives should be written in year-long increments so projects may assess progress towards goals qualitatively and quantitatively on an annual basis.

D) Project Implementation Plan

This section describes in detail the activities that will enable project participants to attain the project objectives. The implementation plan should be written with enough detail that the reader could replicate activities from the description provided. This section must address three areas:

- i. Target Audience. Describe the teachers targeted for participation in the project – How many will be served? What grade levels? How will participants be recruited and selected? Will they attend as individuals, grade level teams, school teams, etc?
- ii. Professional Development Design. List the major components included in the project design (e.g., summer institutes, graduate-credit courses, academic year workshops, on-line courses, in-school coaching, etc.).

Summer Institute is defined by US DOE as a workshop or institute conducted during the summer that

- is conducted for a period of time not less than 2 weeks;
- includes as a component a program providing direct interaction between students and faculty;
- may provide follow-up training during the academic year that is conducted in the classroom for a period of not less than 3 consecutive or non-consecutive days *except that*
 - if the workshop or institute is conducted during a 2-week period, then the training shall be conducted for a period of not less than 4 days; and
 - if the training is for teachers in rural school districts, it may be conducted through distance learning

For each major component, provide a description as detailed as possible, including duration, focus areas, structure, and who will develop and implement them. Describe how the components will engage teachers with content at a level beyond the level they are expected to teach to students; will model and provide opportunities to learn about content-specific instructional strategies with research evidence for improved student achievement; and describe how the professional learning sessions are specifically aligned to *North Carolina Standard Course of Study*. The discussion should provide evidence of (a) appropriate roles and collaboration among all organizations that work together to realize the project's objectives, and (b) sufficient capacity of the partners to support the scale and scope of the project, especially the number of teacher participants.

Include a table listing the project components and the contact hours associated with each one, demonstrating that participants will have a minimum of 80 hours of focused, content-related professional learning experiences.

- iii. Project Timeline. Include a specific timeline of activities for the first 12 months of funding, along with a more general timeline of activities for the subsequent two years.

E) Project Management Plan

This section describes how the partnership will operate efficiently and effectively to implement its planned activities, deal with challenges that arise, and monitor progress toward stated goals and objectives. All primary partners should be fully engaged in the management and oversight of the project. This section must address three areas:

- i. Project administration. Who will direct the day-to-day operation of the project? Who will be involved in higher-level decisions about planning and budgeting, including making necessary mid-course adjustments to activities and expenditures? Describe the specific roles, responsibilities, and time commitments of the persons involved in project management. If a management team is to be formed, list the members of the team, the schedule of their meetings, and how they will make decisions. Provide qualifications for all persons involved in project administration in Appendix IX. Vitae for Project Administration.
- ii. Fiscal management. Which partner will serve as fiscal agent for the project? Identify the person in the fiscal agent who will oversee the project's financial activities, ensuring that funds are received and disbursed according to approved state procedures.
- iii. Partner roles and responsibilities. For each primary and supporting partner, describe their responsibilities under the implementation plan. In addition, list the STEM faculty and (if applicable) Teacher Education faculty from each partner IHE, and how they will be utilized in the project.

F) Evaluation Plan and Research Design

This section describes how the project will gather credible evidence regarding the impact of its activities on participants. The section must address three areas:

- i. Identification of external evaluator. All projects must identify an external evaluator. "External" in this case means someone not involved with the implementation of project activities. The external evaluator may be someone completely outside the partners or may be affiliated with a partner institution, but not in a department directly involved in project operations. Describe the responsibilities of the external evaluator and, if applicable, the responsibilities of project persons who will be involved in the evaluation. Provide qualifications for the external evaluator in the form found in Appendix F of the RFP.

- ii. Evaluation plan. The evaluation plan describes how the project will measure its progress towards meeting its stated objectives (summative evaluation). Provide a table listing the project objectives along with the following information for each objective: type(s) of data to be collected, the instrument or protocol to be administered, and how/when it will be administered. The evaluation plan must include a pre/post objective assessment of teacher content knowledge. An existing valid, reliable assessment should be selected whenever possible.

The evaluation plan must describe how the project will engage in formative evaluation – gathering data to document the quality of project activities and using the data as input into project planning and decision-making.

The evaluation plan must also describe whether a comparison group (matched or unmatched) will be incorporated into the evaluation design and, if so, what data collection will occur with this group. By comparing pre/post changes in participants to pre/post changes in the comparison group, the project will gather important evidence to support any claims of impact on participating teachers.

- iii. Evaluation timeline. A timeline for the evaluation should be included, showing major evaluation-related activities and when they will take place.
- iv. Research Design. Institutions of higher education (IHE) partners are expected to collaborate with the LEA(s) and perhaps also with the project evaluator in developing and implementing a rigorous research design to investigate the effects of the professional development model chosen. *[NOTE: Funding beyond the minimum per teacher may be requested to allow for a strong research component. If extra funds for research are requested, then the budget narrative should be very clear regarding the amount of funds to go to the research and evaluation portions of the project.]*
- v. Dissemination. Each partnership will also be expected to disseminate the results of their research including successful strategies and curricula along with lessons learned. The method of disseminating these activities should be included in the partnership's planned activities. In addition, the NCDPI may also require participants to share information at specified times and in specified ways.

IV. BUDGET FORMS (use the forms provided in Appendices G and H)

V. BUDGET AND BUDGET NARRATIVE

Partnerships must submit **one** budget form for the entire proposed project (including all partners) as well as partner funding requests for sub awards to partners. Project funding requests and partner funding requests must each include a corresponding narrative that describes **in detail** the basis for determining **every** amount shown on the budget form. Both the budget(s) and the corresponding narrative(s) should be aligned with the activities described in the proposal narrative, show evidence of effective, appropriate, and

efficient use of funds, and describe clearly the full range of resources that will be used to accomplish the goals of the project. While local matching funds are not required, if resources outside of Title IIB funds will be used to support project activities, list them in the budget narratives along with the requested Title IIB funds.

- VI. PARTNERSHIP FORMS (use the forms provided in Appendices C and D of the RFP)
- VII. NEEDS ASSESSMENT FORMS (use the form provided in Appendix E of the RFP)
- VIII. EVALUATOR FORM (use the form provided in Appendix F of the RFP)
- IX. VITAE FOR PROJECT ADMINISTRATION (no more than two pages per person)

Guide for Planning

A. Form Partnerships

The high-need LEA(s) must form a partnership with an IHE Department of Engineering, Mathematics, and/or Science. Other partners such as statewide organizations, businesses, and IHE Education Departments may be included, however the primary role of the high-need LEA and the IHE Engineering, Mathematics, and/or Science Departments must be clear in the project design. A Project with a statewide focus still needs a high-need LEA partner to act as fiscal agent, **at least four** additional LEA partners, and at least one engineering, mathematics or science department of an institution of higher education. Document partner planning sessions, including dates, names, and locations to be provided in the proposal narrative.

B. Perform a Needs Assessment

The project should complete a needs assessment, including completion of the form in *Appendix E* of this RFP to determine the professional development needs of the mathematics and science teachers in their target area who will receive professional development under the grant. Specific areas of content knowledge needed should be identified. As part of the grant proposal narrative, the project should describe targeted teacher needs consistent with the proposed professional development and should include any specific data such as teacher survey data, student test scores, and teacher credential information.

C. Establish Goals and Objectives

After partnerships are formed, the school district(s) and the other institution(s) which form the partnership must decide on specific goals with measurable objectives addressing the following areas: 1) Increased teacher-content knowledge; 2) Increased student achievement; 3) Improved classroom instruction; and 4) Development of a sustainable partnership.

D. *Plan for Implementing Professional Development*

Describe clearly and in detail the activities each of the partners will perform to accomplish the program goals, and the contributions each partner will make to the program. The plan should show how the partnership funds will be used to supplement, not supplant, existing mathematics and science professional development programs in the applicant districts. Activities planned must be specifically targeted to the professional development needs of the faculty in the applicant school district(s), as described in the needs assessment.

- Describe how teachers will be recruited for the planned professional development.
- Include a description of the number, type, duration and intensity of the professional development activities, including the number of teachers engaged in each.
- Indicate the total number of instructional hours that will be provided to teachers during the grant period.
- Describe how the professional development activities proposed will be aligned with the North Carolina Standard Courses of Study in Mathematics and/or Science, with student accountability standards in mathematics and science, and with other educational reform activities that promote student academic achievement in mathematics and science.

Next, the partners will choose a focus area for the professional development to be offered by the grant. For the September 2009 Round of MSP Proposals primary consideration for funding will be given to proposals that address the following focus areas:

- **Mathematics K-5:** Preparing teachers to teach the content in the 2009 *North Carolina Essential Standards* for Mathematics K-5 using reform based curriculum materials.
- **Physical Science strand K-8:** Preparing teachers to teach the physical science strand of the *North Carolina Standard Course of Study* for Science, K-8.
- **High School Biology:** Professional development or graduate courses to extend teachers' knowledge of the content in the 2004 Revision of the *NC Standard Course of Study for Biology*. Courses and workshops should include an inquiry approach. Particular emphasis should be on areas where scientific knowledge has experienced recent rapid changes including gene regulation, genomics and biotechnology.
- **High School Integrated Mathematics:** Professional development or graduate courses to extend teachers knowledge of the content in the 2003 Revision of the *NC Standard Course of Study for Integrated Mathematics* and the 2009 *North Carolina Essential Standards for Mathematics A and Mathematics BC*. Courses and workshops should include high-level applications of the mathematics content, appropriate use of technology and connections to 21st century skills. Courses and workshops should feature reform based curriculum materials.
- **Graduate level university courses:** Graduate level courses in mathematics, science, or mathematics and science related education courses with a focus on deepening teacher content knowledge.

Next, the partners will choose a research-based professional development model that addresses the specific identified needs of the targeted mathematics and/or science teachers.

Professional development activities should:

- Relate directly to the mathematics and/or science content in the *North Carolina Standard Course of Study*, and focus secondarily on teaching skills.
- Be proposed depending upon a review of scientifically based research, with an explanation of how the activities are expected to improve student academic achievement and strengthen the quality of mathematics and/or science instruction.
- Enhance the ability of teachers to understand and use the *North Carolina Standard Course of Study* for mathematics and/or for science and to select appropriate instructional strategies.
- Educate teachers to use curricula that are based upon scientific research, aligned with the *North Carolina Standard Course of Study* in Mathematics and/or in Science, and are problem-centered, experiment-oriented, and concept- and content-based.

Examples of professional development activities that could be included in a plan are:

- Establishing and operating mathematics and science summer workshops or institutes (please note the US DOE definition of Summer Institute on page 5), including plans for follow-up training, for mathematics and science teachers.
- Using distance-learning strategies, such as telecasting or e-learning (computer-based learning) together with classroom contact components to deliver professional development curricula.
- Using learning communities, coaching and mentoring as strategies to train and support teachers.

Finally, a project timeline will be developed. It should include specific timeline of activities for the first 12 months of funding as well as a general timeline of activities for the subsequent two year.

E. Create a Management Plan

Describe how the partners will make decisions, communicate, and manage fiscal responsibilities. Give a detailed overview of the role of each partner in the program. Describe staffing for the program, and provide information on the qualifications of proposed personnel who are already employed by the partners. Show time commitment of key personnel in each organization. Demonstrate that the partners have the ability to manage the project, carry out the research, organize the work and meet deadlines. Describe how the proposed partnership activities are relevant to each of the partners' missions. (Vitae should be included in the Appendices.)

F. Formulate an Evaluation Plan and Research Design

Each proposal must include a description of the evaluation plan that will be used to evaluate the program.

Evaluation Plan: Each project is required have an outside evaluator who is not directly involved in providing professional development for the project and who has no vested interest in the project.

The project's evaluator is responsible for providing, in a timely manner, both formative evaluation reports and a summative evaluation report. Specifically, the evaluator must provide (1) an annual evaluation report to be submitted to the United States Department of Education (DOE) as part of the Annual Performance Report for the Mathematics and Science Partnership Program (this evaluation report must include descriptions of evaluation components, identify evaluation measures used, and report findings as documentation of the project's progress toward meeting its proposed goals and objectives) and (2) an evaluation report as part of the project's mid-year implementation report to the state-MSP coordinator. Evaluation reports submitted to DOE or to the state-MSP coordinator must include a qualitative description of how teachers were recruited to participate and how program components were implemented, identification and discussion of obstacles encountered, and identification and description of unintended outcomes -- all detailed so that the successful attributes of the program can be replicated. In addition it is expected that the evaluator will provide frequent and on-going formative evaluation reports toward the purpose of informing the project of areas of concerns and/or recommending modifications to the project's plans to increase the project's impact on student outcomes or partnership sustainability.

A description of the evaluation plan must be included in the application. The evaluation plan must clearly describe what outcomes will be used to measure each goal and how implementation will be documented and described. The evaluation must include:

- Measures of changes in teacher mathematics and/or science content knowledge across the project;
- Measures of student mathematics and/or science content knowledge for students impacted by the project.

The selection and/or construction of evaluation instruments is left to individual projects and their evaluator; however, each project is required, whenever feasible, to rely on instruments with proven reliability and validity. The timeline for the project should include evaluation measures. Some suggested instruments for evaluation and research are listed in *Appendix I*.

Research Participation: Teacher data and student achievement data collected by the project will become a part of the data collected across North Carolina regarding MSP projects. Projects funded in this round of the NC MSP program will be expected to fully cooperate with DPI sponsored researchers conducting research for DPI regarding the results of the MSP projects.

Research Design: Institutions of higher education (IHE) partners are expected to collaborate with the LEA(s), and perhaps also with the project evaluator, in developing and implementing a rigorous quantitative research design to investigate the effects of the professional development model chosen. It is important to note that funding for state-

MSP projects is allocated on the premise that increased teacher knowledge of mathematics and science content will result in increased student knowledge of mathematics and science. This link, while it seems plausible, has not been proven by the research community. The purpose of each project's research design is to contribute to our national vision of effective professional development, professional development that is proven to contribute to increased student learning. For this reason, research designs should be based on solid documentation of the detailed nature of professional development provided by the project as well as

- Measures of teacher opportunity to learn within the project (e.g., professional development observations, teacher interviews);
- Measures of changes in teacher mathematics and/or science content knowledge across the project;
- Measures of student opportunity to learn for students impacted by the project (e.g., classroom observations); and
- Measures of student mathematics and/or science content knowledge.

[NOTE: Funding beyond the minimum per teacher may be requested to allow for a strong research component. If extra funds for research are requested, then the budget narrative should be very clear regarding the amount of funds to go to the research and evaluation portions of the project.]

Hence, the project's evaluation should, in part, provide documentation support for the research component. In terms of research design for state-MSP projects, DOE strongly recommends randomized control trials but accepts well-matched comparison-group designs as an alternative when randomized control trials are not feasible. DOE discourages the use designs that have no control/comparison groups.

G. Plan to Share Results

Each partnership will also be expected to disseminate the results of their research including successful strategies and curricula along with lessons learned. The method of disseminating these activities should be included in the partnership's planned activities. In addition, the NCDPI may also require participants to share information at specified times and in specified ways.

H. Formulate a Budget

Develop a budget together with your partners for the project time period. A carefully reasoned and thoroughly detailed budget is itself a management tool, providing guidance to the project's leadership on how to expend funds, what to purchase, and whom to contract for services. Funds awarded for the project in year one must be spent by September 30, 2011. LEA indirect costs are limited to the indirect cost rate of the fiscal agent LEA. IHE indirect costs are limited to 8% of their contract with the LEA. Other costs should be budgeted as direct costs. Projects must budget at least \$1000.00 each year of the project for travel to required regional and national MSP meetings.

MSP project budgets are limited according to teacher participation and scope of the project. Cost per teacher involved in at least 80 hours of professional development should range from \$4000 to \$7000 for the life of the project. If a strong research component is part of the project, then an amount more than this limit may be requested in proportion to the resources required for the research component. All costs must be reasonable.

Reporting

Each partnership should attend meetings as required by the NCDPI and must report annually to the NCDPI and the U.S. Department of Education regarding the progress in meeting the objectives and targets described in their plan. A mid-year implementation report is also required. The NCDPI will specify the format of the reports and data required.

Preparing an Application

Format

All sections must use one inch side, top and bottom margins. All sections must have a footer and page number on each page. Excluding data tables, all sections must use 12-point font. The narrative section must use double-spacing except for data tables or short, one-paragraph descriptors.

The application must be submitted in two forms: hard copy and compact disc (CD). Please submit one hard-copy document with original signatures and 5 copies of that document. In addition, please submit one complete electronic document on CD. The electronic document should be burned to the CD as one PDF or Word file. NCDPI reserves the right NOT to review applications which fail to adhere to these format instructions.

Required Components

The following lists the required components of an application, in the order they must be submitted. Extraneous materials other than the components listed will be discarded and not reviewed. When applicable, the page limit for a section is shown.

Maximum Number of Pages	Section	Description
2	Title Page and Debarment Form	Use forms in <i>Appendix B</i> parts 1 and 2 of the RFP with the required signature of the superintendent of the lead LEA
1	Project Abstract	Provide a summary that briefly describes the partnership (listing all partners), program goals and objectives, activities, and key features of the program.
35	Narrative	See steps A-F in “How to Apply” section above.
	Budget	Use the budget form in <i>Appendix G</i> to describe the total project funds requested for the grant period. Also, include a Partner Funding Request (see form in <i>Appendix H</i>) to describe the amount of funding from the total budget that each partner will receive. The amounts shown in the

		Partner Funding Request forms must add up to give the total requested on the Total Budget Form (<i>Appendix G</i>).
	Budget Narrative	Describe the basis for determining the amounts shown on the Budget Forms. The budget narrative may be single-spaced. The budget narrative should clarify and support the project plan. Both the project budget and the narrative description should be aligned with the activities described in the proposal narrative and should reflect any coordinated uses of resources from other sources.
	Partner LEA Required Signature Page(s)	Use form(s) in <i>Appendix C (if needed)</i>
	Partner IHE Required Signature Page(s)	Use form(s) in <i>Appendix D</i>
	Documentation of High Needs School District(s)	Use form in <i>Appendix E</i> . One LEA needs assessment form should be submitted for each LEA participating in the project.
	Evaluator Information Page	Use form in <i>Appendix F</i> .
	Vitae of Project Personnel (optional)	No more than two pages per person

Proposal Submission and Review

Submission

Applicants must submit an original bound copy with tabbed section dividers and five copies of the full proposal to the NCDPI. The original must include an original signature of the authorized institutional official on the cover page. Fax transmissions are not acceptable.

In addition, an electronic version must be submitted on a compact disc (CD). A PDF format is preferred as this protects your formatting from being changed by different viewing machines.

To be considered for funding, proposals must be postmarked or received at the NCDPI by 5:00 pm on **January 22, 2010**.

Proposals should be mailed to:
 Everly Broadway, Mathematics Section Chief
 Curriculum, Instruction and Technology Division
 6352 Mail Service Center
 Raleigh, NC 27699-6352

or delivered to:
 301 N Wilmington St.
 Raleigh, NC 27601
 ebroadway@dpi.state.nc.us
 919-807-3838

Review Process

As proposals are received at the NCDPI, staff will review them for completeness and compliance with the requirements set forth in Title II, Part B of *No Child Left Behind* to determine applicant eligibility. If, in the judgment of the NCDPI staff, a proposal is late, significantly incomplete, or an applicant cannot establish its eligibility, the proposal will be omitted from the competition.

The NCDPI will follow SBE policy EEO-O-001 for the grant proposal review process to the extent that this is consistent with the Federal guidelines for the grant. The NCDPI will seek to fund those proposals that show the most promise for successful professional development programs. The decision of the NCDPI/SBE is final.

Following SBE approval, the NCDPI staff will contact eligible project directors to discuss any modifications of the project plan that may be required. 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 scope of work.

The following table shows the maximum point values assigned to each review criterion. It also explains the basis on which points will be awarded.

Criteria	Points
Partnership and Planning Points will be awarded for evidence of cooperative planning and partnership between all of the partners based on information provided in the narrative.	10
Needs Assessment Points will be awarded for demonstrated teacher need (based on the needs of targeted teachers as described in the narrative).	10
Project Goals and Objectives Points will be awarded for the professional development proposed through the “Program Goals and Objectives” sections of the narrative and a clear relationship between the demonstrated needs.	10
Implementation plan Points will be awarded for thoroughness of planning, likelihood of effectiveness and maximum impact of the program based on the information in the narrative and timeline.	30
Project Management Points will be awarded for clearly defined responsibilities and contributions and for the experience and capability of partners based on information provided in the narrative.	10
Evaluation Plan and Research Design Points will be awarded for the capacity to carry out an effective research design and the appropriateness and thoroughness of the activity proposed in the “Evaluation Plan and Research Design” section of the Program Narrative.	20
Budget and Cost Effectiveness Points will be awarded for the completeness and clarity of the program budget and for the appropriateness of expenditures as described in the Budget and the Budget Narrative.	10
TOTAL	100

Award Administration

Notification of the Award

Within 30 days of completion of the State Board Review process, the Project Director and Lead District Superintendent will be notified of the status of their proposal.

Award Conditions

For the 2009 competition, approximately \$4,929,358 is available for Mathematics and Science Partnership (MSP) awards. Funding for possible continued funding in subsequent years is contingent upon appropriations from the U.S. Department of Education and evaluation of the funded projects.

Appendix A

Definitions

For the purpose of this application, the following definitions apply to the following terms. These definitions are based on the definitions included in the *No Child Left Behind Act of 2001* and NCDPI criteria.

High-Need School District

The term “high-need school district” means a school district that meets one or more of the following:

- 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
- Is low-wealth.
- Has not made AYP.
- Has high teacher turnover
- Demonstrates significant need for professional development of mathematics and/or science teachers.

Professional Development

The term “professional development” means instructional activities that are:

- Based on scientific research;
- Based on the *North Carolina Standard Courses of Study* for Mathematics and Science;
- At least 80 hours (including follow-up and coaching) for the grant period.

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. Such research includes research that:
- 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.

- 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.
- 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.
- 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.
- Has been accepted by a peer-reviewed journal or approved by a panel of independent experts through a comparably rigorous, objective, and scientific review.

Appendix B (part 1)

FY 2009-10 North Carolina Department of Public Instruction, Office of Curriculum and School Improvement Mathematics and Science Partnerships Program		Please check all appropriate categories: Proposed Project will include:			
			Mathematics	Science	Other
		Grades K-5			
		Grades 6-8			
	Grades 9-12				
LEA		Code:			
Address					
City		State		Zip Code	
MSP Contact Person					
Title					
Address					
City		State		Zip Code	
Phone #		E-mail			
Title of Proposed Project					
Estimated Number of Teacher Participants			Grade Levels		
Number of Other School Personnel			Contact Hours/Participant		
Credit Hours (if any): Graduate			(semester or quarter)		
Requested MSP Funds \$			Total Budget \$		
MSP Cost per Teacher Participant (Divide total budget by # of teachers participating in 80 hours or more of Professional Development)				\$	
Collaborating Organizations (list all partner organizations)					
<p>Certification by authorized organizational official for the lead LEA</p> <p>Assurances - The Local Education Agency assures that:</p> <ul style="list-style-type: none"> Title II, Part B funds will be used to supplement and not supplant funds from non-federal sources. If the project is funded, non-public schools in the LEA will be contacted at the beginning of the grant as then yearly and will be given an equitable opportunity to participate in professional development funded under Title II, Part B. The LEA will keep records and provide information to the North Carolina Department of Public Instruction (NCDPI) as may be required for fiscal audit and program evaluation consistent with the responsibilities of the NCDPI under Title II, Part B. The applicant will comply with Title VI & VII of the Civil Rights Act of 1964 (race, color, national origin); Section 504 of the Rehabilitation Act of 1973 (handicapped); Title IX of the Education Amendments of 1971 (sex); the Americans with Disabilities Act of 1990, the Age Discrimination Act of 1975 and the Improving America's Schools Act of 1994. All materials and supplies are used strictly for instructional purposes and are used to implement programs, projects, and activities for specific staff development. Programs, projects, and activities will be operated in compliance with Title II, Part B legislation and Non-Regulatory Guidance, and with policies and procedures issued by the North Carolina Department of Public Instruction. The LEA is responsible for repayment of Title II, Part B funds in the event of an audit exception. 					
I hereby certify that all facts, figures, and representations made in this application are true and correct to the best of my knowledge.					
Printed Name of Supt/Chief Officer			Title		
Signature			Date		

Submit five copies (one with original signatures) and one CD copy by **January 22, 2010** to:

**Everly Broadway, MSP State Coordinator
North Carolina Department of Public Instruction;
6352 Mail Service Center;
Raleigh, North Carolina 27699-6352**

Appendix B (part 2)

Debarment Certification

By signing this MSP proposal, the lower tier participant is providing the certification set out below.

1. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into, if it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
2. The lower tier participants shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
3. The terms “covered transaction,” “debarment,” “suspended,” “ineligible,” “lower tier covered transaction,” “participant,” “person,” “primary covered transaction,” “principal,” “proposal,” and “voluntarily excluded,” as used in this clause have the meaning set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.
4. The lower tier participant agrees by submitting this proposal that should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.
5. The lower tier participant further agrees by submitting this proposal that it will include the clause titled “Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion-Lower Tier Covered Transactions,” without modification on all lower tier covered transactions and in all solicitations for all solicitations for lower tier covered transactions.
6. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Non-procurement List.
7. Nothing contained in the foregoing shall be construed to require establishment of system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
8. Except for transactions authorized under number 5 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

North Carolina Department of Public Instruction

Debarment Certification (Title II, Part B-Mathematics & Science Partnership)

No Child Left Behind Act of 2001 (P.L. 107-110)

This certification is required by the regulations implementing Executive Order 12549, debarment and suspension, 34 CFR Part 85, section 85.510, Participants' responsibilities. The regulations were published as Part VII of the May 26, 1998 *Federal Register* (pages 160-192). Copies of the regulations may be obtained by contacting the person to whom this proposal is submitted.

Read instructions on the previous page before completing certification.

- (1) The lower tier participant certifies, by submission of this proposal, that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

- (2) Where the lower tier participant is unable to certify to any of the statements in this certification, such prospective participants shall attach an explanation to this proposal.

Name and Title of Authorized Representative

Date

Appendix C

(Duplicate this page as necessary for each partner LEA)

1. Partner LEA and MSP Contact Person			
LEA		Code:	
Address			
City	State		Zip Code
MSP Contact Person			
Title			
Address			
City	State		Zip Code
Phone #	E-mail		
2. CERTIFICATION BY AUTHORIZED OR INSTITUTIONAL OFFICIALS (Partner LEA)			
Assurances - The Local Education Agency assures that:			
<ul style="list-style-type: none"> • Title II, Part B funds will be used to supplement and not supplant funds from non-federal sources. • If the project is funded, non-public schools in the LEA will be contacted yearly and will be given an equitable opportunity to participate in professional development funded under Title II, Part B for the benefit of children attending non-public schools. • The LEA or Charter School will keep records and provide information to the North Carolina Department of Public Instruction (NCDPI) as may be required for fiscal audit and program evaluation consistent with the responsibilities of the NCDPI under Title II, Part B. • The applicant will comply with Title VI & VII of the Civil Rights Act of 1964 (race, color, national origin); Section 504 of the Rehabilitation Act of 1973 (handicapped); Title IX of the Education Amendments of 1971 (sex); the Americans with Disabilities Act of 1990, the Age Discrimination Act of 1975 and the Improving America's Schools Act of 1994. • All materials and supplies are used strictly for instructional purposes and are used to implement programs, projects, and activities for specific staff development. • Programs, projects, and activities will be operated in compliance with Title II, Part B legislation and Non-Regulatory Guidance, and with policies and procedures issued by the North Carolina Department of Public Instruction. • The LEA or Charter School is responsible for repayment of Title II, Part B funds in the event of an audit exception. 			
The applicant(s) certify 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 statement of assurances.			
		Title	
LEA Representative _____			
		Date	
Signature _____			
		Title	
LEA Representative _____			
		Date	
Signature _____			
		Title	
LEA Representative _____			
		Date	
Signature _____			

Appendix D

(Duplicate this page as necessary)

1. Partner IHE MSP Contact Person

IHE

Address _____

City _____

State _____

Zip Code _____

MSP Contact Person

Title _____

Address _____

City _____

State _____

Zip Code _____

Phone # _____

E-mail _____

2. CERTIFICATION BY AUTHORIZED OR INSTITUTIONAL OFFICIALS

Assurances - The Institute of Higher Education assures that:

- Title II, Part B funds will be used to supplement and not supplant funds from non-federal sources.
- If the project is funded, non-public schools in the LEA will be contacted yearly and will be given an equitable opportunity to participate in professional development funded under Title II, Part B for the benefit of children attending non-public schools.
- The LEA or Charter School will keep records and provide information to the North Carolina Department of Public Instruction (NC DPI) as may be required for fiscal audit and program evaluation consistent with the responsibilities of the NCDPI under Title II, Part B.
- The applicant will comply with Title VI & VII of the Civil Rights Act of 1964 (race, color, national origin); Section 504 of the Rehabilitation Act of 1973 (handicapped); Title IX of the Education Amendments of 1971 (sex); the Americans with Disabilities Act of 1990, the Age Discrimination Act of 1975 and the Improving America's Schools Act of 1994.
- All materials and supplies are used strictly for instructional purposes and are used to implement programs, projects, and activities for specific staff development.
- Programs, projects, and activities will be operated in compliance with Title II, Part B legislation and Non-Regulatory Guidance, and with policies and procedures issued by the North Carolina Department of Public Instruction.
- The LEA or Charter School is responsible for repayment of Title II, Part B funds in the event of an audit exception.

The applicant(s) certify 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.

	Title	
IHE Representative _____	_____	_____
Signature _____	Date	_____
	Title	
IHE Representative _____	_____	_____
Signature _____	Date	_____
	Title	
IHE Representative _____	_____	_____
Signature _____	Date	_____

Appendix E

LEA Information (submit a chart for *each* LEA partner)

1. LEA			
2. Indicate total number of resident children K-12 and low-income resident children K-12. Calculate percent of low income resident children in the LEA. Use free and reduced lunch data from Child Nutrition office of the LEA.	Total Resident Children	Low-Income Resident Children (K-12)	
		Number	Percentage
3. Low Wealth LEA? Yes/No			
4. Indicate # AYP Target Goals Made/# AYP Target Goals (for LEA)	Targets Made	Total Targets	Percentage
5. LEA Improvement Status under NCLB: In Improvement or Not in Improvement			
6. Targeted Teacher Count: Please include a teacher in all categories that apply.			
	Mathematics	Science	
Total Number			
New to the School in the last 2 years			
New to Teaching (Experience level is 3 years or less)			
Alternative Certification			
7. Break down the data in #6 above to support the identified need(s) of the proposed project. <i>For example, if a project targets biology teachers, give the data specific to those who teach biology.</i>			

Appendix F

Outside Evaluator Information

Name of Evaluator

Address

City

State

Zip Code

Primary Contact Person

Title

Address

City

State

Zip Code

Phone #

E-mail

Briefly list credentials and experience relevant to evaluating a project of this nature.

The applicant(s) certify 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.

Evaluator _____	Title	
Signature _____	Date	_____
Project Manager _____	Title	_____
Signature _____	Date	_____

Appendix G

Total Project Budget

Title II, Part B Mathematics Science Partnerships

This page must include the **TOTAL** budget for all of the partners included in the project. This page should be followed by an overall budget narrative.

Program Title:

Name of Fiscal Agent LEA:

Names of Partners:

Total Requested for Project Categories	7/1/10-6/30/11	7/1/11-6/30/12	7/1/12-6/30/13	TOTAL
1. Salaries & Wages (Professional and Clerical)				
2. Employee Benefits				
3. Substitute Pay				
4. Teacher Stipends				
5. Contracted Services				
6. Workshop Expenses				
7. Office Supplies & Materials				
8. Tuition Fees				
9. Equipment (Purchase)				
10. Other (Equipment rental, printing, etc.)				
11. Other (please describe)				
12. Indirect Cost (maximum 8%)				
Total Requested				

The LEA fiscal agent for the project must develop and submit (1) an overall budget; (2) an overall budget narrative and (3) a budget form for each partner. (This form is a required element of the grant application).

Justification for each of the categories must be included in the budget narrative portion of the application. Modifications in the budget must be requested and approved in advance and included as part of the annual report. Funding for year one must be spent by September 2010. Plan the timing of expenditures accordingly.

Total budget is limited to no more than \$7000 per teacher participant expected to spend at least 80 hours in professional development for the project. The \$7000 cap applies to the 3 year period, not just one year. Exceptions to the \$7000 cap may be made for a strong research/evaluation component with costs that can be justified in the budget narrative.

Appendix H

Partner Funding Request

Title II, Part B Mathematics Science Partnerships

Name of Partner Organization:

On this form, list only the funding this partner will receive from the grant.

Cost Requested for Partner Categories	7/1/10-6/30/11	7/1/11-6/30/12	7/1/12-6/30/13	TOTAL
1. Salaries & Wages (Professional and Clerical)				
2. Employee Benefits				
3. Substitute Pay				
4. Teacher Stipends				
5. Contracted Services				
6. Workshop Expenses				
7. Office Supplies & Materials				
8. Tuition Fees				
9. Equipment (Purchase)				
10. Other (Equipment rental, printing, etc.)				
11. Other (please describe)				
12. Indirect Cost (maximum 8%)				
Total Funding to Partner From Grant				

This form should be accompanied by a detailed budget narrative breaking down and explaining each line item in detail.

Appendix I

Resources on this sample list were chosen to assist partners in finding information needed to plan for a MSP proposal. This list is intended to provide samples, not to be exhaustive.

Websites

NC Public Schools <http://www.ncpublicschools.org/> with links to the *North Carolina Standard course of Study*, The State Board of Education Policy Manual, student data, etc.

North Carolina Professional Teaching Standards Commission Homepage, <http://www.ncptsc.org/>.

The National Staff Development Council's standards for teacher professional development may be found at <http://www.nsdc.org/standards/index.cfm>.

North Carolina Colleges and Universities: <http://www.50states.com/college/ncarolin.htm>. Provides links to websites of all North Carolina Colleges and Universities

Department of Education: <http://www.ed.gov/index.jhtml>. This website has a search engine that can find scientifically based research on effective teaching and learning strategies. Be sure to click on "archived results" to include older articles.

MSP-net is a site for the National Science Foundation MSP projects. This site includes many helpful resources. You can browse the site as a guest. <http://hub.mspnet.org/index.cfm?>

North Carolina Mathematics and Science Education Network (NCMSEN): <http://www.unc.edu/depts/msen/>. The North Carolina Mathematics and Science Education Network is committed to providing high quality professional development programs in mathematics and science education that enhance teacher learning and support state and national educational guidelines.

Teacher Education Materials Project (TE-MAT): A Database for K-12 Mathematics and Science Professional Development Providers: <http://te-mat.org/>

Developing Mathematical Ideas professional development curriculum for elementary mathematics teachers: <http://www2.edc.org/CDT/dmi/dmicur.html>

Dynamic Classroom Assessment professional development curriculum for elementary, middle, and high school mathematics teachers: <http://www.etacuisenaire.com/professionaldevelopment/math/dca/dynamic.jsp>

Lenses on Learning professional development curriculum for mathematics leaders: http://www2.edc.org/CDT/cdt/cdt_lo11.html

National Science Resource Center: http://www.nsrconline.org/school_district_resources/index.html

North Carolina Partnership in Mathematics and Science: <http://ncpims.northcarolina.edu/>
NC-PIMS was a partnership-driven initiative with a commitment to the quality, quantity and diversity of teachers, to challenging mathematics courses and curricula for students and teachers, and to supporting institutional sustainability within a framework of evidence-based outcomes.

Center for Inquiry Based Learning (CIBL): <http://tasc.pratt.duke.edu/>
CIBL's purpose is to provide North Carolina K-8 students with opportunities to learn to think as scientists: critically, creatively, and independently. CIBL supports teachers in shifting toward inquiry-based science teaching, an effective tool for helping all students learn. CIBL provides intensive professional development in the use of selected curriculum units and inquiry-based teaching techniques. CIBL supplies and refurbishes the curriculum units and provides support from scientists trained to help teachers use specific curriculum units.

Instruments for measuring student achievement in science

- Partnership for the Assessment of Standards-based Science (PASS). For further information please see the West Ed website at <http://www.wested.org/cs/wew/view/pj/278> or call Sanjay Pardamani at 415-615-3106 or spardan@wested.org.
- Science Process Assessments for Elementary and Middle School Students, Smith & Welliver Educational Services, State College, PA, 814-237-0144.

Instruments for measuring teacher content knowledge

Middle school science: Assessing Teacher Learning About Science Teaching (ATLAST).

- Set 1: Force and motion
- Set 2: Processes that shape Earth (Plate Tectonics)
- Set 3: Flow of matter and energy in living systems

Each set contains instruments for measuring (1) teacher opportunity to learn, (2) teacher content knowledge, (3) student opportunity to learn, and (4) student content knowledge. For further information please see the Horizon Research Inc. website at <http://www.horizon-research.com> under "Current Projects) or call Sean Smith at 919-489-1725.

Middle school mathematics: Diagnostic Mathematics Assessments for Middle School Teachers. Tests are available in six parallel versions in each of four areas:

- Number/Numeration
- Geometry/Measurement
- Probability/Statistics
- Algebraic Ideas

For further information contact Dr. William S. Bush, Director, Center for Research in Mathematics and Science Teacher Development, University of Louisville, Louisville, KY 40292, by phone at 502-852-0590, and by email at bill.bush@louisville.edu.

Middle school science: Diagnostic Science Assessments for Middle School Teachers. Tests are available in six parallel versions in each of three areas:

- Physical science
- Life science
- Earth/space science

For further information contact Dr. Tom Tretter, Director, Department of Teaching and Learning, College of Education & Human Development, University of Louisville, Louisville, KY 40292, or by email to tom.tretter@louisville.edu.

Mathematics: Learning Mathematics for Teaching (LMT). For further information see the website <http://sitemaker.umich.edu/lmt/home> or contact Heather C. Hill, Learning Mathematics for Teaching/Study of Instructional Improvement, University of Michigan School of Education, 610 E. University #1600, Ann Arbor, MI 48109-1259, or by phone at 734-647-5233, or by e-mail at <http://www.umich.edu/~hhill>.

Printed Resources

Banilower, E. R., Boyd, S. E., Pasley, J. D., & Weiss, I. R. (2006). Lessons from a Decade of Mathematics and Science Reform: A Capstone Report for the Local Systemic Change through Teacher Enhancement Initiative. Chapel Hill, NC: Horizon Research. Available from <http://www.pdmathsci.net/reports/capstone.pdf>.

Cohen, D. K., & Hill, H. C. (2000). Instructional Policy and Classroom Performance: The Mathematics Reform in California. *Teachers College Record*, 102(2), 294-343.

Elmore, R. (2002). Bridging the gap between standards and achievement: The imperative for professional development in education. Washington D.C.: Albert Shanker Institute.

Hill, H. C., & Ball, D. L. (2004). Learning Mathematics for Teaching: Results from California's Mathematics Professional Development Institute. *Journal for Research in Mathematics Education*, 35(5), 330-351.

Loucks-Horsley, S. (1998). Designing professional development for teachers of science and mathematics. Thousand Oaks, Calif.: Corwin Press.

Weiss, I. R., Banilower, E. R., McMahon, K. C., & Smith, P. S. (2001). Report on the 2000 National Survey of Science and Mathematics Education. Chapel Hill, NC: Horizon Research. Available from <http://2000survey.horizon-research.com/reports/>.

Weiss, I. R., Pasley, J. D., Smith, P. S., Banilower, E. R., & Heck, D. J. (2003). Looking inside the classroom: a study of K-12 mathematics and science education in the United States. Chapel Hill, NC: Horizon Research, Inc. Available from <http://www.horizonresearch.com/insidetheclassroom/reports/looking/complete.pdf>.

Wilson, S. M., & Berne, J. (1999). Teacher learning and the acquisition of professional knowledge: An examination of research on contemporary professional development. *Review of Research in Education*, 24, 173-209.