State of Arizona
Arizona Department of Education

MATHEMATICS AND SCIENCE PARTNERSHIP GRANT APPLICATION

Mathematics, Grades 7-12

APPLICATION INSTRUCTIONS AND INFORMATION ON SCORING

12/7/2015 THROUGH 3/15/2017
COMPETITIVE SUBGRANT AWARDS TO ELIGIBLE LOCAL EDUCATIONAL AGENCIES APPLYING FOR FUNDS UNDER ARIZONA'S MATHEMATICS AND SCIENCE PARTNERSHIP PROGRAM

In Accordance with
Title II, Part B of
No Child Left Behind Act of 2001

– DEADLINE –
Submission of Applications
October 22, 2015

MATHEMATICS AND SCIENCE PARTNERSHIP GRANT APPLICATION

COMPLIANCE CHECKLIST

Directions: An Applicant local educational agency (LEA) that is submitting a Mathematics and Science Partnership (MSP) Application should not submit this check list. The Compliance Check List is included in your Packet so that LEA personnel are informed of actions they are required to take ***prior*** to having an Application reviewed and scored by Technical Reviewers who represent the Arizona Department of Education (ADE).

Members of an LEA Leadership Team preparing a MSP Application should use the Compliance Check List as a tool to assist in analyzing the quality of the Application being submitted to the ADE.

Applicant LEA Name: _____

All statements *(except the last one which applies solely to members of a Consortium)* must be verified by ADE staff, where a check mark (✓) indicates a "**Yes**" for each compliance issue.

_____ LEA Letter of Intent, due on **September 29, 2015**, was submitted to the ADE.

_____ The Applicant LEA has attended one of the MSP 7-12 Math Grant Application Webinars.

□ Sept. 8, 2:00 p.m. - 3:00 p.m. □ Sept. 10, 10:00 a.m. - 11:00 a.m.

_____ The Applicant LEA has submitted its Subgrant Application by the deadline of **5:00 p.m.** on **Thursday, October 22, 2015**. The Application was submitted in electronic form to Frankie.Sullivan@azed.gov and as one (1) Original and three (3) copies that will be made available to ADE Technical Reviewers. Failure to submit the Application electronically and ensure arrival at the ADE of an Original and 3 copies of your Application by the deadline constitutes non compliance and your Application will be excluded from the Technical Review process. **(Please review mailing and hand-delivery options provided on the last page of this Application Instructions).**

_____ The Applicant LEA has responded to **all** of the Subgrant Application requirements and/or questions, in their many parts (including Appendix items). (The ADE reserves the right to exclude from Technical Review any Application that fails to address all the requirements/questions).

_____ The Applicant LEA has satisfied any and all apparent violations of ADE procedures regarding required progress or completion reports or other requisite reporting, such as its submission of the Curricular & Instructional Alignment Declaration, in keeping with its responsibilities for receipt of federal and state funding. ***NOTE:*** LEAs that are unable to resolve their having been placed on programmatic "hold" and/or having been found to be currently ineligible to receive state or federal funding are **not** eligible to compete for a Subgrant Award under the MATHEMATICS AND SCIENCE PARTNERSHIP Program.

_____ The applicant LEA is eligible for funds at this time and has selected schools that meet the criteria of "high need" and has engaged in a viable partnership with the Mathematics, Science, or Engineering Department of an IHE.

CONSORTIUM MEMBERS:

_____ ***The fiscal agent designated by LEAs that have chosen to collaborate as members of a single consortium shall assume the role of the Applicant LEA for purposes of submitting the Subgrant Application.***

APPLICATION INSTRUCTIONS FOR INSTITUTIONS OF HIGHER EDUCATION, HIGH-NEED LOCAL EDUCATIONAL AGENCIES, AND ORGANIZATIONS SEEKING A MATHEMATICS AND SCIENCE PARTNERSHIP GRANT

Introduction/Background

In January of 2002, the No Child Left Behind Act of 2001 (NCLB) became law. The Improving Teacher Quality Grant Programs (Title II) are a major component of the *No Child Left Behind* legislation. NCLB programs encourage scientifically-based professional development as a means for improving student academic performance.

Title II, Part B of NCLB authorizes a Mathematics and Science Partnership (MSP) competitive grant program. The intent of this program is to increase academic achievement of students in mathematics and science by enhancing the content knowledge and teaching skills of classroom teachers. **Core partners in these grants must include mathematics, science, and/or engineering departments/faculty from institutions of higher education (IHE), including community colleges.** Partnerships of higher education, high-need LEAs, and other stakeholders will draw upon the strong disciplinary expertise of the mathematicians, scientists, and engineering faculty from higher education institutions to develop professional development activities that will increase student achievement by providing teachers with strong mathematics and/or science content knowledge.

The Arizona Department of Education (ADE) is responsible for the administration of the MSP Program. Available funds will be awarded by the ADE to support successful proposals submitted by eligible partnerships comprised of departments/faculty of mathematics, science, or engineering at Arizona institutions of higher education and high-need LEAs.

I. Program Description/Key Features

A. Purpose: ***The Mathematics and Science Partnership Program*** supports improved academic achievement of students in the areas of mathematics and science by encouraging state educational agencies, institutions of higher education, local educational agencies, elementary schools, and secondary schools to partner in high-quality professional development programs, including programs that:

- Improve and upgrade the status and stature of mathematics and science teaching by encouraging institutions of higher education to assume greater responsibility for improving mathematics and science teacher education through the establishment of a comprehensive, integrated system of professional development that continuously stimulates teachers' intellectual growth and upgrades teachers' knowledge and skills;
- Focus on ways to deepen teachers' content knowledge, increase teachers' knowledge of how students learn particular content, provide opportunities for engaging learning, and establish coherence in teachers' professional development experiences.

B. Arizona Department of Education Priorities:
The SY2016 Arizona MSP grant program will support a new project to:

- **Develop a cadre of highly competent 7-12 teachers** of mathematics with strong mathematical content knowledge.
- **Develop projects that bring together educators with mathematicians, instructional leaders and/or engineers** to expand teachers' subject matter knowledge of mathematics as

well as their pedagogical content knowledge in mathematics. Projects will include 80 hours of rigorous mathematics content that directly relates to the underlying mathematics concepts in grades 7-12 and enhances the ability of teachers to implement both the content and practice standards in Arizona's College and Career Ready Standards for Mathematics (AZCCRS-M). The content must follow a progression of mathematics content based on a High School Conceptual Category i.e. functions, algebra, statistics and probability, etc. and well-connected domains in grades 7-8. This work may be guided by the Progression documents found at The University of Arizona Institute of Mathematics, http://ime.math.arizona.edu/progressions/, or any similar body of research. **Note:** utilizing a Conceptual Category and 7-8 domains to guide the professional development does not necessarily exclude well-connected standards from other Conceptual Categories and 7-8 domains. Each project will be required to implement a model of professional development which includes a minimum of 104 contact hours during the life of the project (80 hours of rigorous mathematics content institutes and at least 24 additional hours emphasizing conceptual understanding, formative assessment, and/or instructional planning with coaching support). The schedule must include at least one week (40 hours) of intensive professional development focused on content during the summer with the remainder of the content occurring during the academic year or a combination summer/academic year structure.

- **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 that includes formative assessment practices as part of the student monitoring process. 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.
- **Develop professional development resources to be shared with other educators through an online environment maintained by the project.** Projects will make all grant developed materials available for public and private use by ADE. If copyrighted materials are used it must be evident that these materials are not developed, created or maintained using grant funding.
- **Demonstrate how technology can be used as a tool within mathematics instruction to gather, manipulate, and explore mathematics concepts.** 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 are encouraged to utilize current free 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 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://learningforward.org/standards-for-professional-learning

C. Eligible Schools

To be eligible for a MSP Grant, an applicant LEA must demonstrate that each participating school meets the definition of a ***high-need*** school. The following must be met for an LEA to apply.

- Evidence of school(s) with a poverty level, defined by Title 1 Section 1114 of the NCLB Act, of having at least a rate of 35% Free and Reduced lunch program student participation.

Further, the proposal must demonstrate that participating teachers serve a sufficient number of students exhibiting this need.

- Eligible grantees are limited to two MSP grant awards, one in mathematics and one in science**. If a grantee has a Mathematics MSP project (Intel Math or High School Math) that is ending on June 30, 2016, the grantee is not eligible to apply for this grant.**

D. Partnership Eligibility

Partnerships must include an Arizona high-need LEA as defined above and the mathematics department/faculty of an IHE. A mathematician will partner with a mathematics educator as the instructional team. The mathematics educator can be faculty from a college of teacher education, personnel from the district, or other qualified individuals. The number of staff delivering the professional development must be proportionate to the number of participants. **The partnership must focus on mathematics teachers in grades 7-12.** Other partners may include businesses, colleges of teacher education, additional local educational agencies, public charter schools, public or private schools, a consortium of such schools, local parent organizations, and nonprofit or for-profit organizations with demonstrated effectiveness in improving the quality of mathematics teachers. **A representative from the LEA must be designated as the project director.** All partners' contributions must be aligned to the goals, objectives, and targeted content of the project. **All parties involved share responsibility, goals, and accountability for project implementation and outcomes**. Grantees need to adhere to regulations 76.652 and 76.656 of the U.S. Department of Education's General Administration requirements (EDGAR) and Section 9501 of ESEA as reauthorized by NCLB. These regulations state that meaningful consultation must occur between the LEA and any private schools within that LEA's attendance area. This consultation must occur prior to submitting a grant proposal. The purpose of this regulation is to ensure that teachers of all students (public or private) are able to benefit from the provision of federal funding.

E. Project Requirements

Projects will bring together mathematics teachers in grades 7-12 with mathematicians and mathematics educators in order to improve mathematics content knowledge, pedagogical content knowledge, instructional practice, and use of technology. The activities carried out by the partnership shall be scientifically research-based. An explanation of how the activities improve student academic achievement and strengthen the quality of mathematics instruction must be included. Projects must also provide teachers with clear connections between fundamental mathematics and AZCCRS-M for grades 7-12 as the main mathematics content for the professional development. Projects must also meet the following requirements:

- Implement a model of professional development which includes a minimum of 104 contact hours during the life of the project meeting the following minimum requirements:
  - Eighty (80) hours of rigorous mathematics content that directly relates to the underlying mathematics concepts in grades 7-12 and enhances the ability of teachers to implement both the content and practice standards in Arizona's College and Career Ready Standards for Mathematics (AZCCRS-M). The schedule must include at least one week (40 hours) of intensive professional development focused on content during the summer with the remainder of the content occurring during the academic year or a combination summer/academic year structure.
  - A minimum of 24 additional hours focusing on instruction that includes one or a combination of the following: 1) Development of connected pathways of conceptual understanding, 2) Use of formative assessment and analysis of student work, and/or 3) Standards based instructional planning with coaching support. Online modules from The

Center on Standards & Assessment Implementation through WestEd and CRESST may be used to support the 24 additional hours. These modules are available for download at http://csai-online.org/ .

- Projects must identify significant rigorous mathematics content aligned with AZCCRS-M in grades 7-12. The content must follow a progression of mathematics content based on a High School Conceptual Category i.e. functions, algebra, statistics and probability, etc. and well-connected domains from grades 7-12. This work may be guided by the Progression documents found at The University of Arizona Institute of Mathematics, http://ime.math.arizona.edu/progressions/, or any similar body of research. **Note:** utilizing a specific Conceptual Category and 7-8 Domains to guide the professional development does not necessarily exclude well-connected standards from other Conceptual Categories and 7-8 Domains.
- Teacher Outcomes: Projects shall provide professional development in deep mathematics content in order to create a cadre of mathematics teaching experts in grades 7-12 who will share their expertise with others and build statewide capacity. Deep mathematical content includes:
  1) Understanding of the content knowledge required by AZCCRS-M in grades 7-12 (as outlined above), Standards for Mathematical Practice, and common misconceptions that students hold in regards to fundamental concepts of mathematics.
  2) Understanding of mathematics as a way of thinking by engaging in mathematical problem solving, Mathematical Practice, and applying mathematics to a variety of contexts.
  3) Understanding the use of formative assessment practices to determine if instruction has been effective in improving student understanding and to determine the next steps in the teaching of a particular mathematics concept.
- Activities shall include two weeks or the equivalent (80 hours) of content institutes that meet the priorities identified in section II.B by ADE in order to foster an understanding of the essential mathematics required to teach to higher standards and improve student performance in meeting AZCCRS-M in grades 7-12.
- The 80 hours of professional development focusing on deep rigorous mathematics content in AZCCRS-M must be co-taught and co-planned by a mathematician and mathematics educator team. The mathematician is someone from an IHE and the mathematics educator is from the LEA or the IHE.
- Projects must address the results of a recent comprehensive needs assessment of teacher professional development and student achievement needs to demonstrate that the project content/focus aligns to the demonstrated needs of selected schools that comprise the eligible partnership with respect to the teaching and learning of mathematics.
- Participating schools must not be involved in a mathematics school reform initiative; or the proposal must clearly articulate how this program will integrate with ongoing reform efforts.
- The six components of scientifically-based research must be employed (See section "II. Definitions, B" for clarification).
- Alignment to Arizona's College and Career Ready Standards - Mathematics, the InTASC Teaching Standards, and the Learning Forward Standards;
- Projects must provide opportunities for enhanced and ongoing professional development to improve mathematics subject matter knowledge including pedagogical content knowledge, for a minimum of 104 contact hours during the project.
- The professional development design must incorporate the following four elements: Build Content Knowledge, Content Planning, Implementation, Building Professional Culture (See

section "II. Definitions, C. Four Elements of the Professional Development Design" for clarification).

- There must be an active and well-defined partnership between IHE faculty and LEAs in all aspects of the grant, including planning, delivery, and evaluation of the professional development. The partnership must create a logic model or theory of action that is linked to the goals and objectives of their project.

  A partnership must:

  1) Identify shared goals and clearly describe the mutual benefits that will be derived by each of the members by participating in the partnership activities.
  2) Establish a formal agreement that ensures cross-organizational membership and interdependent work routines.
  3) Provide evidence of the commitment of all partnership members to the achievement of partnership goals.
  4) Describe the partnership's governance structure specific to decision-making, communication, and fiscal responsibilities.
  5) Explain how teachers will be recruited for this project and provide a timeline for the recruitment process.

- Each project must hire an external evaluator who should be an active partner from the planning stages through completion of the final reports. The evaluator designs and manages an evaluation and accountability system that ***includes measurable objectives related to BOTH process evaluation (implementation) and outcome evaluation.*** The external evaluator may be affiliated with the partnering IHE, but he/she must not be working in the same department as the participating IHE faculty nor take an active role in the program delivery.
- The external evaluator collaborates closely with program staff to collect and analyze data, and to provide feedback to project stakeholders, including the partnership participants, schools, districts, ADE, state evaluators, and the Federal government in the form of an evaluation report. Additional responsibilities include implementing state-wide project assessments and ensuring the local evaluation meets the Federal GPRA reporting guidelines. The evaluator, collaborating with the project director, provide quality control and upload project data to state coordinator and Federal reporting systems as specified by grant requirements. The evaluator must attend the technical assistance meetings held by the ADE in Phoenix or through webinars and Regional MSP meetings as determined by ADE. Individual projects are required to provide scheduled updates and data to the ADE and the U.S. Department of Education regarding progress in meeting the objectives described in the evaluation plan.
- Each eligible partnership receiving a sub-grant shall develop an evaluation and accountability plan for activities of the project that <u>include a rigorous measurement of the impact of the project activities on teachers' content knowledge, instructional practice, and student achievement</u>. Measurable objectives must include the degree to which the activities of the project affect the Teacher Outcomes described in section II.E as well as student performance in mathematics. Pre- and post-test teacher data and student data are required components of the evaluation. Projects are encouraged to identify and use valid and reliable (research-based) measurement tools or strategies. So that projects can be compared statewide, each project is required to use appropriate sections of the Reformed Teaching Observation Protocol (RTOP). The external evaluator or senior staff member of the project will coordinate the administration of the student content measures, teacher content measures and the RTOP to project participants at two time points: before professional development begins, and again after all professional development has been completed. The content measures and the RTOP

must also be administered to the control or comparison group at two appropriate time points. Project staff and evaluators will follow a state-developed protocol for administering the instruments and disseminating data so that the proprietary information of the instruments and the personal privacy of participants are fully ensured. All project staff administering the Math RTOP must attend Math RTOP training provided through ADE. Training on the Mathematics RTOP is scheduled on **December 11, 2015** at 3300 N. Central in Phoenix.

- Individual projects are required to provide scheduled updates and data to the ADE and the U.S. Department of Education regarding progress in meeting the objectives described in the evaluation plan.
- Projects must design and maintain an internet accessible storage space for all Professional Development materials. Projects will compile, upload and deliver all professional development materials to the ADE via an internet portal to the storage space. The professional development materials will include all participant materials (e.g. agendas, handouts, activities, and references), instructor notes, lesson plans, curriculum, and any other necessary components that would enable replication of all professional development sessions. Materials shall be organized into Modules suitable for professional development replication. This requirement should be included as part of the partnership agreement among all partners including the LEA, IHE faculty and Mathematics Educator. **The materials utilized for the professional development sessions are posted when used and uploading continues regularly throughout the project.** The materials must be maintained throughout the life of the project plus 6 months. All materials must be accessible for a minimum of 2 years after project end date.
- Projects will make all grant developed materials available for public and private use by ADE. If copyrighted materials are used it must be evident that these materials are not developed, created or maintained using grant funding. Projects should include Creative Commons licensing for any professional development materials created and developed using grant funds. (For more information regarding Creative Commons visit https://wiki.creativecommons.org/FAQ.) If a project plans to use any copyrighted materials a consultation with the ADE MSP team is required before inclusion in the project. The purchase and use of copyrighted materials must be identified in the budget.

F. Funding

Grants will be awarded for a 15-month period. The level of funding will depend upon the number of teacher participants and the number of students who will benefit.

G. Fund Use

Funds received shall be used to supplement, and not supplant, state and/or local funds that would otherwise be used for proposed activities. Funds may be used for the following:

- support of professional development programs and content development in mathematics
- administrative costs
- stipends for participating teachers, control group teachers, and substitutes (a minimum of $25/instructional hour for teacher participants is recommended)
- materials for professional development use, program evaluation, etc.
- travel costs and expenses to attend in-state MSP technical assistance meetings and Math RTOP trainings, regional USDOE MSP meetings, and Training-of-Trainers sessions.

No more than 10% of the project budget should be allocated to project evaluation, which may include stipends to control or comparison teachers for their time and effort in evaluation. It is acceptable for the partnership to charge indirect costs. Please refer to the following regulations

for guidance: EDGAR Sec. 75.562 - Indirect cost rates for educational training projects, EDGAR 80.30 - Changes, and EDGAR Section 80.36 - Procurement. However, institutions are strongly encouraged to maximize the use of grant funds for direct services. All budgets and budget descriptions must be aligned with the activities described in the proposal narrative and reflect any coordinated uses of resources from other sources. All LEAs who receive federal funds (including MSP funds) must maintain time and effort documentation. This requirement is included in the General Assurances and the MSP Assurances that LEAs must submit.

Ineligible Costs:

- costs associated with writing the proposal
- materials for classroom use
- space rental
- expenditures for food at professional development sessions
- supporting the research of individual scholars or faculty members
- computers, projectors, smart boards, or other similar equipment
- supporting travel to in- or out-of-state professional meetings/conferences (other than the USDOE Mathematics and Science Partnership Meetings and/or Conferences), unless it is demonstrated that attendance will directly and significantly advance the project

H. Review Process

Proposals will be reviewed by ADE 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 a proposal or about applicant eligibility will be referred to the proposing organization. If in the judgment of the ADE, a proposal is significantly incomplete, or an applicant cannot establish its eligibility, the proposal will be omitted from the competition.

Grants will be awarded through a competitive review process. The review and scoring of each application will be based on criteria that support sustained and intensive high-quality professional development, based on the most current research. Using a numerical scoring system, this process is intended to identify the applications that meet the needs of Arizona's eligible schools.

An expert panel will evaluate eligible applications according to or against the required application components and the established criteria reflected in the scoring rubric. The review panel will review each eligible application and make recommendations for acceptance. Following the review, the ADE staff will contact selected Project Directors to discuss any modifications of the project plan and/or budget that may be required. In order to maximize the effects of limited funds, applicants may be asked to revise the project budget and/or scope of work.

I. Review Criteria

Complete scoring rubrics will be furnished at the Grant Application Webinar and can be found on the ADE website. The Superintendent of Public Instruction may emphasize specific factors in making decisions to fund proposals, such as evidence that the project will serve specific geographic areas and will facilitate the state in meeting overall professional development and teacher education goals.

J. Rejection of Proposals

The ADE reserves the right to reject any and all proposals received as a result of this announcement and will do so if the proposal does not adhere to funding specifications or application preparation instructions.

K. Project Administration

Notification of the Award:
Once the review process is completed, the Project Director will be notified of the status of the proposal. Notification is anticipated to be completed by **October 30, 2015**. There will be a short timeline for finalizing budgets. All final budgets will be due by **November 4, 2015**.

Award Conditions:
For the SY2016 MSP competitions, approximately $3.0 million is available for the Mathematics and Science Partnership award competitions. Continuation of awards is contingent upon this program receiving funding through the USDOE and upon the State's evaluation of the funded programs.

Reporting Requirements:
Each eligible partnership receiving a grant must agree to submit a detailed project evaluation plan and budget. The evaluation plan must identify the instruments and strategies used for formative and summative evaluation, and include a plan for recruiting and retaining participant and comparison/control teachers for the life of the project. (At least 36 participants in each group.) The evaluation plan must anticipate attrition of participants from both groups and describe strategies used to ensure that the design will maintain sufficient sample size and statistical power in analysis.

Each eligible partnership receiving a grant must submit detailed agendas and plans of the topics and participant materials 2 weeks prior to the first day of planned activities. Instructor notes are not due at this time. (See section "I. E. Project Requirements", p. 8, for details regarding instructor notes submission.)

All partnerships are required to report quarterly and annually to the ADE and annually to the USDOE regarding their progress in meeting the objectives and targets described in their accountability plan. Further information regarding reporting requirements and forms will be communicated to the Project Directors and will be posted on the ADE website when available. Projects will compile and deliver all Professional Development materials (as described in section "I. E. Project Requirements") to the ADE.

For further questions relevant to the SY2016 MSP 7-12 Mathematics Grant Competition, please contact:

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Secondary Mathematics Specialist
Arizona Department of Education
Phone: 602-364-1802
E-mail: frankie.sullivan@azed.gov

II. Definitions

A. Professional Development

The term "professional development" means instructional activities that:

- Are based on scientifically-based research and state academic content standards, professional teaching standards, and assessment;
- Improve and increase teachers' content knowledge of the academic subjects they teach;
- Enable teachers to become highly qualified or appropriately certified;
- Are sustained, intensive, and classroom-focused in order to have a positive and lasting impact on classroom instruction and the teacher's performance in the classroom.

B. 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:

- Employs systematic, empirical methods that draw upon observation or experiment;
- Involves 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.

C. Four Elements of the Professional Development Design

The four elements are described below:

- During "Build Content Knowledge" teachers are actively engaged in developing Mathematical Knowledge for Teaching. This includes specialized content knowledge for teachers, knowledge of teaching, knowledge of students, knowledge of curriculum, and horizon knowledge of what happens across the grades. Teachers are involved in developing a working knowledge of their grade-level standards and how they interface with the eight Standards for Mathematical Practice. Learning activities include opportunities such as mindfully examining the grade-level standards, analyzing student work, viewing and analyzing classroom video, and examining exemplar classroom lessons. Teachers gain critical skills needed to notice, analyze, and respond to students' thinking and performance.
- During "Content Planning" teachers have opportunities to engage in content based activities that directly transfer to classroom practice. This includes grade level discussions focused on integration of newly learned mathematics strategies. Teachers may examine their adopted mathematics curriculum to determine how their new content

knowledge will integrate with their required materials. Teachers plan mathematics learning goals and anticipate student responses to assigned tasks.

- During "Implementation" teachers engage in activities focused on standards-based learning, allowing time to analyze teacher moves and anticipated student strategies. Teachers also engage in pedagogy that guides student learning and practice matching student work to anticipated strategies.
- "Building Professional Culture" embodies a collaborative culture and professional learning community that focuses on continuous learning and promotes a community of learners who all take responsibility for learning and teaching through collaborative and collegial interactions. Four characteristics of effective learning environments:
    - Learner-centered environments that attend to the knowledge and experiences learners bring to the situation
    - Knowledge-centered environments that emphasize teaching new content and concepts in ways that align with how people learn the discipline
    - Assessment-centered environments that provide learners with on-going feedback on their learning and promote self-reflection on learning
    - Community-centered environments that nurture learning communities characterized by collaboration, collegial interaction, and reflection

  Professional learning sessions develop learning environments that incorporate all four aspects of professional communities and provide a learning enriched environment for both students and teachers. Sessions include collaboration, experimentation, and challenging discourse. Experimentation requires skills and dispositions toward inquiry, norms that recognize and support failure, and ideas with which to experiment.

D. External Evaluator; Formative vs. Summative Evaluation

Formative or "process" evaluation describes the "what" and the "how" of a project's implementation from the perspective of various stakeholders, most importantly, from its participants. Formative evaluation verifies what the program is, and whether or not it is delivered to the participants effectively. Process data provide feedback on program delivery and quality, and whether the program is reaching its targeted audiences. Formative evaluation is also used in the process of designing and monitoring the components of a program. Formative evaluation is much like formative assessment in a classroom, where the instructor frequently monitors and "checks in" with participants for understanding, and adjusts instruction, or participants receive formative feedback on their performance so they recognize and address gaps between their performance and the expected goals. Finally, formative evaluation data provide vital information needed to interpret outcomes measured by summative evaluation. Formative evaluation data describe the conditions under which a program has an impact on participants.

Summative evaluation activities determine the impact and value of the program by measuring program outcomes. Outcome measures describe "what happened, for whom, under what conditions?" In the MSP program, it is hypothesized that providing high-quality, content-based professional development to teachers will result in increases to teachers' content knowledge, changes in teaching practice, and improvement of student learning and achievement. The Federal MSP Program requires an outcome evaluation and strongly encourages an experimental or quasi-experimental research study to measure the impact of project activities on student achievement and teacher performance. A rigorous outcome evaluation design compares participants to a control group or matched comparison group of similar teachers/students. The measures required by the ADE are central components in the MSP program outcomes evaluation. Each project may also determine other summative outcomes to be measured in addition to these required tools.

E. Role and responsibilities of the local external evaluator

The external evaluator is an active member of the MSP partnership who serves as an objective observer. The external evaluator may be affiliated with the partnering IHE, but he/she must not be working in the same department as the participating IHE faculty nor take an active role in the program delivery. The external evaluator collaborates closely with program staff to collect and analyze data, and to provide feedback to project stakeholders, including the partnership participants, schools, districts, ADE, state evaluators and the Federal government. This includes responsibility for implementing state-wide project assessments and ensuring the local evaluation meets the Federal GPRA reporting guidelines.

The local evaluator and project director maintain close contact with the ADE and the state level evaluators. The evaluator must attend technical assistance meetings held by the ADE in Phoenix or through webinars and USDOE regional meetings when needed. The local evaluator is responsible for designing, coordinating, and ensuring the quality of formative and summative evaluation data collection, reporting, and feedback to project stakeholders. The evaluator, collaborating with the project director, provide quality control and upload project data to state coordinator and Federal reporting systems as specified by grant requirements.

IHE faculty and project staff may design and carry out data collection related to the project or research studies in addition to the core program evaluation. It is strongly suggested that the external evaluator include methods and results of these studies in his/her plan and analysis, and that all partners coordinate their communications and requests for data with each other and with districts, schools, and teachers to minimize administrative burden on participants.

Other responsibilities for the local external evaluator include:

- Ensure compliance with Federal Human Subjects Protection regulations as well as with any district or LEA IRB requirements if appropriate;
- Clearly inform all treatment and control/comparison participants of their roles and responsibilities in evaluation data collection for the life of the project, regardless of whether they continue to work in participating districts;
- Help project managers and partners to build buy-in and commitment to the need for evaluation data to inform future program designs and ensure future funding;
- Plan to share their instruments, collaborate and communicate with other partnerships and with state-level evaluators on a regular basis;
- Collaborate with IHE, LEA, and/or district and school administrators to align with other local initiatives, use or align with local tools when possible, and develop agreements with schools and districts for data access and collection according to the MSP timeline;
- Include formative (process) evaluation to inform the design and adjustment of professional development and other project interventions at each stage of project implementation;
- Assist with communicating state- or federal-level evaluation changes or requests to program partners;
- Plan to be an active and contributing member of the program partnership, communicating regularly with all stakeholders.

III. Proposal Requirements

Proposals must be submitted by the deadline of **5:00 p.m.** on **October 22, 2015.** The Application must be submitted in electronic form to Frankie.Sullivan@azed.gov and as one (1) Original and three (3) copies that will be made available to ADE Technical Reviewers. Applications will be available to download from the ADE MSP webpage on August 26, 2015.

A. Letters of Intent

Please send a letter stating your intent to submit an application for an MSP grant by **September 29, 2015**. In this letter, please provide a brief description of the proposal, including the MSP project's anticipated activities (goals and objectives and professional development models). In addition, identify the anticipated project partners (include names), targeted schools/districts, the anticipated number and grade levels of teachers who will receive the intervention, the approximate number of students who will be impacted, and an estimate of the funds needed. Please send this letter, electronically to Frankie.Sullivan@azed.gov.

B. The following **(1-8)** lists the required components of an application, in the order they must be submitted. Narrative sections must be type written, double-spaced and the font used must not be smaller than 12 point. Arial, Courier, or Calibri are permitted font types. There must be one inch side, top, and bottom margins. Charts, graphs, and tables may be single spaced with type no smaller than 10 point. Any supporting charts, graphs, and tables must be placed in Appendices and referenced in the narrative. All appendices must be clearly labeled and easy to locate. The application, not including the Appendices, shall not exceed 25 pages. Only approved projects will transfer their applications to the ADE online Grants Management System. A formatting sheet that matches the online application is provided at the Grant Application Workshop. Please use the formatting sheet as a guide when writing your application and adhere to the 7500 character limit for each section. This will allow an easy transfer to the online system if your project is approved.

1. **Cover Page & Partner List**
   Use the forms provided in Appendices A and B of the application appendices document.

2. **Abstract**
   Provide an abstract of the proposal that briefly and concisely describes the MSP project's anticipated activities and timeline during the fifteen months. Please include the partnership participants (students, teachers, schools, and other partners), project goals and objectives, activities, key features (model of delivery), and the project's intended results. The abstract should be no more than 1,000 words and can be single-spaced. The abstract is not included in the page limit.

3. **Partnership Comprehensive Needs Assessment (Rubric Section 1)**
   This section shall include a description and the results of a comprehensive needs assessment of the teacher professional development needs with respect to the teaching and learning of mathematics with selected schools that comprise the partnership. **Partners must collectively identify and prioritize** the baseline professional development needs of involved teachers and the academic needs of their students, aligned to the content/focus of the grant project including:
   - The number and percentage of 7-12 teachers in the selected schools that comprise the partnership who have sufficient and insufficient mathematics content knowledge disaggregated by grade level and/or course;

- Specific student learning needs of targeted students in selected schools that comprise the partnership based on student achievement data from multiple sources;
- The number and percentage of students to be impacted by this partnership.

This baseline data must be determined using a relevant assessment of teacher professional development needs and student needs. This section will include a description of the methods used to collect this information. The results of this comprehensive needs assessment must be used in the establishment of the goals and objectives for this proposal.

4. **Partnership Project SMART Goals and Objectives (Rubric Section 2)**
   Describe the specific long-term and short-term goals and objectives of the program. Goals are clear and objectives are specific, measurable, attainable, results-oriented, time bound (SMART). Link these SMART goals and objectives to the professional development needs of the teachers. This section must include time-sensitive measurable objectives that will be accomplished and indicate progress toward (Appendix G):
   - Reducing the number of teachers who are not adequately prepared to teach mathematics, while increasing the number of teachers who are adequately prepared to teach mathematics.
   - Increasing the academic achievement of students taught by the teachers involved in the program (use of both pre and post assessment student data required);
   - A theory of action plan or logic model that is linked to the goals and objectives of the project.

5. **Research/Evidence Base and Efficacy of Plan to Increase Student Achievement (Rubric Section 3)**
   Partnership implementation plans must include:
   - A description of prior efforts to improve teacher content knowledge and student achievement in mathematics, lessons learned from these prior efforts, and how this project will relate to and build on those efforts;
   - Evidence that the planned activities will address identified measurable outcomes through clear strategies that provide roadmaps to achieving both the long and short-term goals and objectives of the project;
   - A description of how the activities to be carried out by the eligible partnership will be based on a review of scientifically-based research, and an explanation of how the activities are expected to improve student academic achievement and strengthen the quality of mathematics instruction;
   - A description (outlining the targeted concepts) and timeline of all the professional development activities including the number, types, duration, intensity, and responsible party (Appendix G);
   - An explanation of how these activities will be aligned with the targeted concepts within Arizona's College and Career Ready Standards for Mathematics, the inTASC Teaching Standards, and the Learning Forward Standards;
   - A description that illustrates how the design of the professional development provides for work-embedded application of new learning, continuous reflection, and ongoing support;
   - Evidence that the professional development is rigorous and challenging in academic content, integrates technology in instructional learning experiences, and develops pedagogical content knowledge (Evidence of rigor, challenge and technology integration should be in the sample lesson plan, description, and timeline);

- Evidence that the design includes the following elements: Build Content, Content Planning, Implementation, and Building Professional Culture. The sample plan must address all four elements. (The proposal must include a sample lesson plan in the proposal appendices.)
- A detailed plan of responsibilities and timeline for creating and maintaining all grant documentation on internet accessible storage.

6. Partnership Evaluation and Accountability Plan (Rubric Section 4)

The federal program requires that each partnership develop and implement an evaluation plan that serves both formative and summative functions.

Rigorous evaluations and accountability have become central aspects of programs funded by the United States Department of Education (USDOE). In particular, the USDOE strongly encourages the use of random assignment evaluation designs for summative evaluations in which intervention and control or comparison groups are constructed by randomly assigning some teachers to participate in the program activities and others to not participate. Random assignment from a pool of volunteers to intervention and control or comparison groups (at least 36 participants in each group) is an acceptable form of randomization for the purposes of this evaluation. Adequate recruitment must take place to compensate for attrition rates.

In cases where random assignment is not practical, USDOE suggests the use of a control or comparison group of teachers that are carefully matched (prior to the implementation of the intervention) to the targeted population. Matching characteristics might include: teacher and school demographics; number of undergraduate or graduate course credits completed in the content area, years of classroom experience, current grade level and years of teaching at that grade, other professional development hours or work experience in related content areas. Control or Comparison groups should not be comprised of teachers that had the opportunity to participate in the intervention but declined. The USDOE MSP website includes a guiding document on the criteria for classifying designs of MSP evaluations.

Each partnership will report quarterly and annually to the ADE and annually to the USDOE regarding its progress in meeting the objectives and annual targets described in the partnership's accountability plan. Local evaluation must include tools that will be used to assess the program's progress and measure the impact of the professional development. The annual report will follow specific guidelines/formats for reporting content and data, which will be communicated during technical assistance meetings and/or via email.

Grantees are expected to participate in the state's overall evaluation of Arizona's MSP Program. Participation includes meeting at designated times during the year and working with the state's MSP Coordinator, MSP staff, and external evaluator (e.g. using common data tools, providing data collection timelines, data, and submitting quarterly and annual reports). Each project must use the required state instruments. This requirement includes pre-testing and post-testing using student content measures, teacher content measures, and the mathematics RTOP with both intervention and comparison groups. In order to ensure inter-rater reliability, all project personnel responsible for administering the mathematics RTOP must attend a mathematics RTOP training provided through the ADE. In addition, each grantee must provide required data to the USDOE.

Describe the experimental design in detail including implementation. The plan will include evaluation procedures that measure:

- Progress toward meeting the goals and objectives established in response to the identified needs;
- Student academic achievement in mathematics;
- Teacher content knowledge and implementation efforts.

Applicants should include a short statement of the research questions that the external evaluator seeks to answer (e.g., "Does the MSP project increase teacher mathematics content knowledge; if so, by how much?")

Include plans for both formative and summative evaluation. In the formative sense, evaluation should provide evidence of the strengths and weaknesses of the project, informing the partnership's understanding of what works and what does not in order to guide project modifications as needed. The evaluation should also be designed to respond to the summative need for an objective analysis of data in order to determine the effectiveness of the project in contributing to student and teacher growth.

Identify and describe the qualifications of the organization and/or individuals responsible for executing the evaluation plan both internally and externally. The evaluation plan must also clearly articulate how the activities will help the MSP Program build a rigorous, cumulative, reproducible, and usable body of findings. **Due to the significance of this section, if any indicators are scored below "Meets Standard" (See Rubric), the grant proposal may be rejected.**

7. **Commitment and Capacity of Partnership (Rubric Section 5)**
   This section must show evidence of meaningful partnerships that exhibit characteristics including, but not limited to, the following:
   - Evidence that all partners participated in long-term planning for and development of this proposal;
   - Evidence that all partners will play a role in the ongoing planning, delivery, and evaluation of the proposed project;
   - Identification of all staff that will carry out the proposed activities and the specific institutional resources to support the activities. Vitas for each key partner's staff will be submitted along with the completed form, Partner Contributions and Commitments for each participating partner (See Appendices C and D). Include a Letter of Commitment from each partner outlining the roles of the partners, contributions and their duties and responsibilities related to the goals and the objectives of the project;
   - Recruitment of teacher participants must begin by the LEA before submitting the proposal. Evidence of a good faith effort of recruitment by the partners must be submitted using the Teacher Assurance Form (See Appendix H);
   - Description of the partnership's governance structure specific to decision-making, communication, and fiscal responsibilities;
   - Description and evidence of how the private schools were informed and participation. (Appendices E and F);
   - A detailed description of how the partnership will continue the activities funded under this proposal after the grant period has expired (June 15, 2016). This description must include a plan for building leadership capacity.

8. **Partnership Budget and Cost Effectiveness (Rubric Section 6)**
The budget should be tied to the scope and requirements of the project and provide sufficient detail for each partner. A 15-month project budget (12/7/15 through 3/15/17) must be submitted on the form found in Appendix I. The budget must include detailed line item descriptions. The amount contained in each budget category must be commensurate with the services or goals proposed, and the overall cost of the project must match the professional development provided and the number of teachers served. All budgets must fund an evaluation and key partnership staff to participate in at least two state technical assistance meetings and one regional MSP meeting, and an external evaluator to attend the spring state technical assistance meeting and one regional MSP meeting. Funds must also be allocated for staff to attend the mathematics RTOP training if needed. Project directors must attend all ADE and USDOE meetings. A brief summary of the budget outlining the costs of each category with totals for each partner must be provided in the narrative portion. Matching and in-kind contributions are taken into positive consideration during review for project funding. Include descriptions of all such contributions in the narrative.

(Appendices can be found as a separate file on the MSP webpage)

Delivery Instructions

An envelope containing the LEA's MSP Application and three additional copies must ***physically*** arrive at the ADE by **5 p.m.** on **Thursday, October 22, 2015** according to the options below:

U.S. Postal Service Delivery
(Return-receipt-requested)
Postmarked: **October 15, 2015**
To: Arizona Department of Education
c/o Frankie Sullivan
K-12 Standards Unit
1535 W. Jefferson Street, Bin 5
Phoenix, AZ 85007

FedEx
UPS, *etc.*
Mail Date: **October 15, 2015**
To: Arizona Department of Education
c/o Frankie Sullivan
K-12 Standards Unit
1535 W. Jefferson Street, Bin 5
Phoenix, AZ 85007

Hand-delivered with Receipt Issued
Hand to: Frankie Sullivan
17th Floor
3300 N. Central Avenue
Phoenix, AZ 85012
Deadline: **5 p.m. on Thursday, October 22, 2015**

NOTE: All Applicant LEAs must satisfy all potential and apparent violations of ADE procedures regarding required progress or completion reports or other requisite reporting, such as its submission of the Curricular & Instructional Alignment Declaration, in keeping with its responsibilities for receipt of federal and state funding. [LEAs that cannot successfully resolve their having been placed on programmatic "hold" and/or having been found to be currently ineligible to receive state or federal funding are not eligible to compete for a Subgrant Award under the Mathematics and Science Partnership Program.]