ILLINOIS MATHEMATICS AND SCIENCE PARTNERSHIPS
I-STEM NETWORK
RFP WEBINAR

MARCH 3, 2015

Key Contributors:
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IMSP I-STEM NETWORK

**Agenda**

- Federal Requirements
- Purpose, Vision and Goals
- Grant Award and Period
- Eligible Applicants
- Deliverables
- Tentative Timeline
- Submission Requirements
- NGSX, Intel Math and ISBE Model Curriculum
- Contact Information
- Questions
Federal Requirements


- Formula grant to ISBE to enable ISBE to award subgrants, on a *competitive* basis, to eligible partnerships to carry out the authorized activities outlined in the federal legislation.

- Research-based professional development designed to promote content and pedagogical knowledge for K-12 math and science teachers.

- Comprehensive Needs Assessment

- Use of scientifically-based research, data and assessment

- Equitable Participation of Private Schools

- Annual Performance Report (APR)

- Access to mathematicians, scientists and engineers, sophisticated equipment and resources.
**Summer Workshops**

- By definition, summer workshop requirements include professional development activities that are conducted for a period of not less than two weeks and consist of a minimum of 80 hours; and include, as a component, a program that provides direct interaction between classroom teachers and university faculty.

**Institute Dates**

- Also by definition, institute dates are intended to be follow-up trainings during the academic year for a period of not less than four (4) consecutive or nonconsecutive days and a minimum of four (4) hours in duration. If the follow-up training is for teachers in rural school districts, the follow-up training may be conducted through distance learning.

*One (1) or more of the institute days can be used to participate in the annual IMSP I-STEM Network Conference.*
Vision
The I-STEM Network will be designed to provide regional support to teachers in order to improve student achievement in the STEM disciplines.
**Goals**

- Improve student performance in math and science through professional development and resource development for K-12 teachers;
- Develop classroom culture with learning opportunities for students and teachers by including high-quality, research-based instructional materials such as ISBE's Model Curriculum for Math and Science as well as others and providing support for the New ILS and *Framework for K-12 Science Education*;
- Promote strong teaching skills by increasing instructors’ understanding and application of scientifically based educational research appropriate to math and science teaching and learning; and
- Build the capacity of math and science teacher-leaders within a regional statewide context; and assist teachers in understanding the vision and instructional shifts outlined in the New ILS and the *Framework for K-12 Science Education*.
**Purpose**

- Identify up to twenty-two (22) Area Partnerships for the IMSP I-STEM Network equally distributed between a mathematics focus (MAP) and a science focus (SAP). Eleven (11) APs will be awarded for mathematics (MAP) and eleven (11) APs will be awarded for science (SAP) across Illinois. The AP will consist of at least 1 (one) MAP and one (1) SAP per Area. At least one (1) MAP and one (1) SAP will serve CPS exclusively. However, additional APs may be awarded in any Area (including CPS) based on the quality of the proposals.
The I-STEM Network will utilize the Areas designated by ISBE and the ROEs/ISCs.

All entities represented in the partnership must be located within the same Area.

A partnership both as a whole, as well as its individual entities (IHE, ROEs/ISC, LEA, and BIN or for-profit organization), may only be awarded one (1) Science Area Partnership (SAP) and one (1) Mathematics Area Partnership (MAP) (except partnerships proposing to serve Chicago Public Schools exclusively).
Eligible Applicants

The Area Partnership must include:

- An engineering, mathematics, or science department of an institution of higher education (IHE);
- A high-need local education agency (LEA);
- A Regional Office of Education (ROE)/Intermediate Service Center (ISC);
- A business/industry/nonprofit (BIN) or for-profit organization with demonstrated effectiveness in improving the quality of mathematics and science teachers.

These are minimum requirements
Program Specifics

- Each Mathematics Area Partnership (MAP) and Science Area Partnership (SAP) must recruit and manage two (2) cohorts of teachers consisting of at least twenty (20) grade K-8 teachers and at least twenty (20) grade 9-12 teachers.

- Teachers representing grades 7-12 must be teachers of mathematics (for MAP) and science (for SAP).
Program Specifics continued

- In Areas II, III, IV, V, and VI there must be at least one (1) additional LEA involved in a SAP or MAP in addition to the primary high-needs LEA applicant for the proposal. This additional LEA must be located elsewhere in the Area (minimum 50 miles distance between them and the primary high-needs LEA identified in the SAP or MAP proposal).

- It is requested that at least one teacher participant represent Special Education, one teacher participant represent Career and Technical Education (CTE) and one teacher participant represent English Language Learners (ELL) in each AP.

- While not required, it is recommended that AP consider submitting names of interested teacher participants.
**Grant Amount**

The anticipated grant to be awarded to 22 Area Partnerships in each year of the grant period is $250,000 ($750,000 total over a three-year period).

**Grant Period**

The initial grant period will begin no earlier than April 1, 2015 and will extend from the execution date of the grant agreement until September 30, 2015. Funding will be available via continuing application for two additional fiscal years (i.e., FY 2016 {October 1, 2015 through September 30, 2016} and FY 2017 {October 1, 2016 through September 30, 2017}) contingent upon a sufficient appropriation for the program and satisfactory progress of the grantee in the preceding grant period.
**Teacher Training**

- Each funded Area Partnership (AP) will utilize modules of instruction and curricular resources identified and coordinated by the I-STEM Network Lead Partnership.
- K-12 teachers in the I-STEM AP will participate in capacity-building professional development activities through a synchronous system. This system will feature consistent, high-quality content coordinated by the I-STEM Network Lead Partnership, as well as the I-STEM Steering Committee.
- Summer workshops will be co-designed and co-facilitated by the Lead Partnership, Next Generation Science Exemplar System for Professional Development (NGSX), Intel Math leaders, as well as the Area Teacher Leaders (ATL).
- Also by definition, institute dates are intended to be follow-up trainings during the academic year for a period of not less than four (4) consecutive or nonconsecutive days and a minimum of four (4) hours in duration. Institutes will be co-designed and co-facilitated by the Lead Partnership and APs, as well as the Area Teacher Leaders (ATL).
- One (1) or more of the institute days can be used to participate in the annual IMSP I-STEM Network Conference described below.
Recruit and Train 2 cohorts of teachers

- Each (MAP) and (SAP) must recruit and manage two (2) cohorts of teachers consisting of at least twenty (20) grade K-8 teachers and at least twenty (20) grade 9-12 teachers.
- Teachers representing grades 7-12 must be teachers of mathematics (for MAP) and science (for SAP).
- Areas II, III, IV, V, and VI there must have at least one (1) additional LEA involved in a SAP or MAP in addition to the primary high-needs LEA applicant for the proposal. This additional LEA must be located elsewhere in the Area (minimum 50 miles distance between them and the primary high-needs LEA identified in the SAP or MAP proposal).
- A targeted recruitment plan as well as a plan for teacher retention across the duration of the grant must also be included in successful proposals.
- Each high-needs LEA partner must involve at least three (3) of their teachers as participants.
- All participants from LEAs other than the high-need partnership LEA must have district approval that includes the district commitment to follow all grant requirements.
Building Capacity for Effective Math Instruction

- MAPs will use Intel® Math an 80-hour professional development course focused on developing teachers' understanding of K–8 mathematics. Intel® Math will provide professional development in mathematics for K-8 teacher participants in the MAPs in the form of a course co-facilitated by a mathematician and a mathematics educator.

- Since Intel Math is designed to be a K-8 program, the program for mathematics professional development for grades 9-12 teacher participants in the I-STEM Network will be identified and coordinated by the Lead Partnership, ATL, and I-STEM Steering Committee and is not otherwise defined in this RFP.

- Applicants are encouraged to propose professional development activities in their proposals for high school mathematics that they feel would address the needs of the teachers they intend to serve in their particular MAP.

- While not required, it is requested that MAPs submit names and CVs of proposed Intel Math Instructors (mathematician and math educator).
Building Capacity for Effective Science Instruction

- The IMSP I-STEM Network Science Area Partnerships (SAP) will use the Next Generation Science Exemplar System for Professional Development (NGSX).
- For the SAP, the required content and resources will include the implementation of NGSX and professional development on the ISBE Model Science Curriculum.
- NGSX is a K-12 system and will be implemented with both SAP cohorts.
- This research-based online professional development system is designed to engage educators in face-to-face communities involving the Area Teacher Leaders and NGSX instructors to implement three-dimensional learning as described in the *Framework for K-12 Science Education*.
- Teachers will work in study groups facilitated by the ATL as well as the SAP leadership to implement NGSX.
- Generally, most institutes will be co-facilitated by NGSX and Intel Math experts and the ATL.
Evaluation Requirements

- The expectation for evaluation in the I-STEM Network Area Partnerships is compliance with the evaluation requirements determined by the Lead Partnership and successful submission of the Annual Performance Report (APR).
- The I-STEM Network Lead Partnership will design a plan for the evaluation of the statewide I-STEM Network Program.
- Area Partnerships must include the recruitment plan and selection criteria for a .50 full-time equivalent (FTE) Data Coordinator who will work closely with the Lead Partnership to ensure each AP is compliant with all evaluation components.
- It is not necessary that the Data Coordinator have an extensive background in evaluation.
IMSP Website and Conference

- The IMSP I-STEM Steering Committee will work with ISBE to coordinate an annual statewide conference for math and science. The purpose of this conference is to share relevant topics, resources and updates from the AP and the statewide I-STEM Network, as well as allow teacher participants an opportunity to engage with national, state, and local resources designed to assist with implementation of the New ILS. The date and location for the conference will be established by ISBE and the I-STEM Network Steering Committee.

- An I-STEM Network website with social media components will be established and maintained by the I-STEM Network Lead Partnership with input from the I-STEM Network Steering Committee. The website will allow for sharing of information about partnership activities in order to provide open access to information and resources provided by the I-STEM Network and all of the AP.
The Lead Partnership will recruit and establish a cohort of geographically equitable K-12 Area Teacher Leaders (ATL).

The ATL will be a group of experienced math and science educators from across the state that will be trained to co-facilitate professional development and supportive services in the SAPs and MAPs in their area.

ATL will undergo specialized training during the 2014-2015 academic year which will consist of professional development in science and math content, Model Math Curriculum, and Model Science Curriculum, as well as facilitation skills.

Beginning in summer 2015, the ATL will co-facilitate the SAPs and MAPs attended by the first groups of K-12 teachers participating in the I-STEM Network.
Timeline

✓ April 1, 2015
  • Submission deadline for Area Partnership RFP
  • Area Partnership Commitment/Certs and Assurances submitted as part of proposal

✓ May 2015 (tbd)
  • Tentative awarding date for Area Partnership RFP
**IMSP I-STEM NETWORK**

**Required for Successful Submission (4/1/15 by 5:00pm CST):**

- Narrative
- Attachments 1-13
  - Commitment Form, Attachment 2 sections apply to specific entity addressed
  - Program-Specific Terms, Appendix 6
  - Equitable Participation, Attachment 12 and GEPA, Attachment 13 is completed by High-Need LEA
  - Business/Industry/Nonprofit Entity must complete Certs and Assurances, Attachments 7-10 if they receive any funds from IMSP I-STEM Network Program
- Any necessary appendices
- Submit as described in Proposal Format Section
- Original plus two copies and an electronic copy on CD or USB
- Budget Summary, Attachment 4
- Budget Narrative, Attachment 5
- FY 15 Required on ISBE Forms
- Proposal may include FY15 and FY16 on Spreadsheet or Word Document (for planning purposes)
- IMSP Benefits Worksheet (recommended not required) (upon request)

*State and Federal Grant Administration Policy, Fiscal Requirements and Procedures Handbook: http://www.isbe.net/funding/pdf/fiscal_procedure_handbk.pdf*
Further Explanation:

ISBE MATHEMATICS MODEL CURRICULUM
http://www.isbe.net/common_core/htms/math-models.htm

NGSX
http://ngsx.org/

INTEL MATH
http://math.arizona.edu/~ime/intelmath/
Public Act 97-704

Each middle school grade level and high school course contains a sequence of units

Designed to address all standards for that level in a cohesive manner.

The initial phase had a deadline of March 1, 2013

The curricular units were designed in accordance with

- PARCC Model Content Frameworks PARCC
- CCSSM materials

ISBE expanded the Math Model Curriculum to include:

- Scope-and-sequences and units for grades K-5
- Assessments, model lessons, and lesson documents for grades K-8 and Integrated Math 1, 2 and 3 high school courses
- All materials are updated as new information is released by PARCC
Assessments and Lessons

- Scope and Sequence
- Unit Map
- Assessments Lesson Map
- Looking for Balanced Assessment
  - Formative
  - Summative
  - Self assessment
- Lessons Tab
  - Most have one multi-day lesson
  - Very few have multiple multi-day lessons
- Lessons (One multi-day lesson per unit)
**Background**

- 40 educators from across the state
- Dr. Brian Reiser, Dr. Joe Krajcik and Michael Novak
- Teachers received in-depth training in *Framework for K-12 Science Education & NGSS*
- Storylines
- 11 Teams (middle school and high school)
- Piloted and revised mid-late Spring
- Supported by professional development
NGSX: CYBER-ENABLED SUPPORT FOR TEACHER INVESTIGATION OF THE SHIFTS IN CLASSROOM TEACHING REQUIRED BY NGSS

Brian J. Reiser, Northwestern University
Sarah Michaels, Clark University
Jean Moon, Tidemark Institute
Cindy Passmore, U. of Calif, Davis

I-STEM Webinar, March 3, 2015
NGSX PD approach

- Ground teachers’ learning of the science, student thinking about science, and pedagogical support of students around a common subject matter challenge.

- Analyze cases of classroom learning
  - How do students engage in science practices to build the explanatory idea, piece by piece, over time?
  - How do teachers support practices to build these ideas?
  - How do the tasks situate students’ engagement in practices in making sense of phenomena?
Teacher study group
blended learning model

NGSX poses challenge

Teachers work together as science learners

Teachers analyze classroom cases

Embedded expert guidance

Lori McClanahan
North Olympic Peninsula Study Group
Oct 14, 2013 08:56pm PDT

Laura, Susan, Sandi
The wall is the water, and with a hole in the stopper more puppies can enter and push on the water from that side, allowing the wall to move toward the drinker.

Unit 4 How Do I Build a Classroom Culture that Supports Public Reasoning?

NGSX-trained facilitator
The modeling matter pathway

Units 1-3: Developing and using models to explain phenomena

Unit 4: Building a discourse community to support modeling

Unit 5: High school case of developing and refining models over time

Unit 6: Middle school case of argumentation to develop particle model
The modeling matter pathway (units to be developed for IL MSP)

Units 7-8: Designing Classroom Units that Reflect NGSS

Classroom video cases to support enactment of ISBE model science curriculum units
National Usage of NGSX

- 2013 NSF pilot with 200 teachers in 9 states
- 2014-2015 partnerships with state/district departments of education funding
  - Vermont, Connecticut, Denver

To date, 350 teachers nationally
Teachers learn science and pedagogy for NGSS

Content Learning Gains

Confidence Teaching with NGSS

Confidence in Teaching with Science and Engineering Practices

Effect size .74

Effect size .56

Effect size .44
NGSS Storyline Approach

- Used to design ISBE model curriculum science units
- Teachers use storyline approach to analyze classroom cases to learn about 3D learning in NGSX
- Teachers use storyline approach to learn how to enact the ISBE model science curriculum units

Unpack disciplinary core ideas and crosscutting concepts

Link unpacking to questions and phenomena

Select practices to make sense of phenomena

Develop storyline where each step arises from pending questions or gaps in explanations

Coherent Storyline for unit
Summary: NGSX for I-STEM Area Partnerships

- **Matter pathway:** Engages teachers in the science and pedagogy of NGSS three dimensional learning with K-12 classroom cases

- **Take It Back To Your Classroom:** Prepares teachers to support science and engineering practices to help students develop and use disciplinary and crosscutting ideas in their own classrooms
  - Learn to adapt existing materials
  - Prepare to implement NGSS aligned units
Cost and Role for NGSX

- $10,000 per Science Area Partnership (all inclusive)  
  *(assumes up to 40 teachers total)*
- Facilitators (Area Teacher Leaders) trained by NGSX (funded by Lead Partnership)
- Licenses for NGSX use
- Support
- Technical assistance
Intel Math®

Aubrey Neihaus
Project Manager
Institute for Mathematics and Education
University of Arizona
Intel Math

• A nation-wide math content-based professional development program for K-8 teachers.
• Has been taught in AZ, CA, CT, FL, GA, IL, MA, MI, NJ, NM, OR, PA, UT, VA, and WI began in 2007, and has reached over 5,500 teachers to date.
• Adapted from the Vermont Math Initiative by author Dr. Ken Gross
• Piloted by the Intel Foundation
• National Scaling managed by the Institute for Mathematics and Education at the University of Arizona
Course Basics

• 80 hour professional development course
• For K-8 school teachers in mathematics content
• Emphasis on deepening the conceptual understanding of mathematics through exploration, inquiry activities, solution sharing, and homework
• 90% mathematics content & 10% mathematics pedagogy
• Co-teaching model → 1 mathematician instructor
  1 mathematics educator instructor
Course Themes

- Mathematics is problem solving
- Arithmetic, geometry, & algebra are interconnected
- There are many ways to solve a problem
- Mathematics is not a spectator sport
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<th>Intel Math is not...</th>
<th>Intel Math is...</th>
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<tbody>
<tr>
<td>remediation</td>
<td>deeply conceptual</td>
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<td>make and take activities</td>
<td>building foundational knowledge of teachers</td>
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<tr>
<td>only focused on the math a particular teacher teaches</td>
<td>about the coherent whole of K-8 mathematics</td>
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Costs for Intel Math

- Instructor Stipends  
  20,000
- Printing and Shipment of Materials ($125 per teacher)* 
  3,750
- Supplies for course 
  1,000
- National Training Agency Support and Services* 
  4,250
- Teacher Participant Stipends ($1,200/teacher) 
  36,000

Costs for Instructor Training

- Instructor Stipends (for 2 instructors) 
  3,000
- Travel and Accommodations (for 2) 
  2,500
- Registration (?) 
  4,000
Contact Information

Illinois State Board of Education, College and Career Readiness Division

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