Creating and Sustaining a PK-16 Partnership

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The NebraskaMATH Partnership

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A Decade Long Investment

In December 2013, Ruth Heaton, Tom McGowan (both UNL), Barb Jacobson (LPS) and I submitted a Math Science Partnership proposal to the National Science Foundation to create the Math in the Middle Institute Partnership. In addition to LPS, our core partners were ESUs 6, 7, 13. Our proposal was funded, and in August 2014 we began a decade long partnership to strengthen the teaching and learning of mathematics in Nebraska schools.

Note: Commissioner Matt Blomstedt was a member of our National Advisory Board.
Why?
Real change is difficult but needed

- ... our overall public school system ... has shown little sign of improvement, particularly in mathematics and science.
- The unanimous view of the committee members ... is that our nation’s outlook has worsened.
- The two highest priority actions for the nation ... are to provide teachers in every classroom qualified to teach the subject they teach and to double the federal investment in research.
A recent U.S. study linked math results from the 2011 TIMMS and NAEP reports

- Here are some data about how Nebraska is doing based on the TIMSS average of 500.

<table>
<thead>
<tr>
<th>Score</th>
<th>Country/Province</th>
</tr>
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<tbody>
<tr>
<td>613</td>
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</tr>
<tr>
<td>493</td>
<td>California</td>
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</table>
My view

Society expects our universities to make a major contribution to improving K-12 education and, in particular, K-12 mathematics education.

and

Investing in high quality teachers is the single most important thing we can do to improve K-12 mathematics learning.
Educating Teachers of Science, Mathematics, and Technology:

This National Research Council report recommends:

“a new partnership between K-12 schools and the higher education community designed to ensure high-quality teacher education and professional development for teachers.”
The mathematics education of teachers should be based on **partnerships** between mathematicians, mathematics education faculty and school mathematics teachers.
University support has been critical

• Center for Science, Mathematics and Computer Education
  – Permanent infrastructure providing staff support
• Math and Science Teachers for the 21st Century Program of Excellence
  – Approximately $350,000/yr for 13 years (2002-2015)
• $1.5M match for NebraskaNOYCE
• Administrative Support
  – Chair, Dean, Vice Chancellor, Chancellor
  – University Foundation support for fund raising
Math in the Middle Institute Partnership (2004-2011)

• A 25-month (12 course) masters program that educates and supports teams of outstanding middle level math teachers who will become intellectual leaders in their schools, districts, and ESUs.

• A major initiative to provide evidence-based contributions to research on learning, teaching, and professional development.

• A special focus on rural teachers, schools, and districts.

**M^2 Goal**

**Invest in high-quality teachers** in order to improve K-12 student achievement in mathematics and to significantly reduce achievement gaps in the mathematical performance of diverse student populations.
Math in the Middle Teachers
156 teachers have earned a master’s degree.
GOAL: An active, mature K-16 partnership that can be sustained by state dollars and other grants after the end of NSF funding and that links mathematics teachers and school administrators from across Nebraska with university mathematicians and mathematics educators to improve K-12 mathematics education in Nebraska.
Primarily Math Teachers
(a program for K-3 Math Specialists)
Nebraska Algebra/NTN Teachers
(Programs for high school teachers)
NSF Supported Professional Development

- Math in the Middle Institute - $5.9 million
  - A master’s program for middle level (5-8) teachers
- NebraskaMATH - $9.2 million
  - Primarily Math (for K-3 teachers)
  - Nebraska Algebra (for Algebra 1 teachers)
  - New Teacher Network (for new secondary teachers)
- NebraskaNOYCE - $3 million
  - Robert Noyce NSF Master Teaching Fellowships (for extraordinary master teachers)
  - Robert Noyce NSF Teaching Fellowships
  - (to support a postbac master’s and certification program)
Impact of NSF Supported Professional Development

- Math in the Middle: 156 teachers
- Primarily Math: 263 teachers
- Nebraska Algebra: 75 teachers
- New Teacher Network: 64 teachers
- Robert Noyce NSF Master Teachers: 30 teachers
- Robert Noyce NSF Teaching Fellows: 13 teachers
Sustaining the Partnership

- **Nebraska Math and Science Summer Institutes**
  - Teachers get a 20% tuition discount
  - We have been able to award about $75,000 in supplemental fellowships for several years to further lower the cost of graduate education
  - In Summer 2014, 35 NMSSI Courses were offered in 9 Nebraska communities.
  - Approximately 10 high school teachers are earning a masters each summer taking NMSSI courses.
  - It is now possible to earn a master’s degree taking all courses online.
Sustaining the Partnership

• NebraskaMATH – Strengthening the UNL-OPS Partnership
  – A $5.45 million grant from The Sherwood Foundation® and the Lozier Foundation funds massive professional development for Nebraska’s largest and most challenged district
  – Primarily Math; Math in the Middle; NTN; Fellowships for NMSSSI courses

• The Buffett Early Childhood Fund funded Math Early On
  – a $528,000 research and PD initiative for pre-school teachers.

• LPS-UNL Professional Development program
  – LPS used Title I funds ($538,000) to fund new cohorts of teachers to participate in the Primarily Math and Math in the Middle programs

• An Improving Teacher Quality Grant will enable us to work with grade 4-6 teachers in Scottsbluff

• ESU3 organized all the districts it serves to offer Primarily Math to a cohort of ESU3 teachers.
Sustaining the Partnership

• The NebraskaMATH Secondary Teacher Education Partnership is linking UNL, UNO and UNK to an initiative of the Association of Public and Land-Grant Universities (APLU) to improve secondary mathematics teacher education.

• Active Learning Mathematics is an APLU initiative to transform freshman mathematics teaching and learning with funding from The Helmsley Trust.
  – This initiative is also leading to a planned IUSE proposal to NSF.
Sustaining the Partnership

• The Success of the 10-year Math in the Middle – NebraskaMATH Partnership has helped open the doors to newer NSF grants.

• Data Connections - $1.2 million to develop new statistical models to study the effects of teacher professional development.

• Three new NSF-funded Noyce grants:
  – Midwest Regional Robert Noyce Connections ($800K)
  – NebraskaMATH Omaha Noyce Partnership ($1.2M)
    • Angie Hodge at UNO is the lead PI
  – NebraskaNOYCE Phase II ($300K)
Extending the Impact of NSF Supported Professional Development

• Math in the Middle 156 teachers
  – Three new cohorts (94 teachers currently in Math in the Middle)
• Primarily Math 263 teachers
  – New initiatives involve 117 teachers with more to come
• Nebraska Math Summer Institutes ~1500 registrations
Expanding the Partnership

• Imagine the possibilities: A statewide partnership where faculty in Nebraska’s colleges and universities work in partnership with K-12 educators (Nebraska Department of Education, Educational Service Units, Local School Districts) and Nebraska businesses and foundations to make Nebraska a model state for high quality PK-12 student achievement in mathematics and science.
Expanding the Partnership