

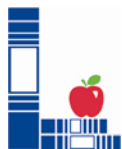


# Nebraska **MATH**

UNIVERSITY OF  
**Nebraska**  
Lincoln

## Using Teacher Inquiry to Translate Institute Learning into Classroom Practice

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# Observations of Practice

Change comes slowly:

- Emphasis on explaining procedures rather than reasoning
- Feeling constrained by textbook and testing
- Doing problem solving or “habits of mind” on Fridays
- Viewing students and parents as major barriers to enhanced learning



## The nature of the challenge of transfer is:

- Mathematical
- Pedagogical
- Context specific



# Action Research within the Institute

Math in the Middle - 3 summers, 2 academic  
years

8 mathematics courses

4 education courses

Action research occurs in year 2.

- Fall: course, plan project
- Spring: research (collect data)
- Summer: write report



## Action Research Process

1. Identify problem of practice
2. Formulate research questions
3. Review literature on related studies
4. Design study
5. Obtain IRB
6. Collect data
7. Analyze data
8. Write up project



## Year 1

We learned. . .

- what the process means for teachers and course instructor
- how to make the process doable and manageable for teachers
- how to see the process of inquiry as supportive of teaching rather than as a separate task
- how to gain IRB approval for individual projects in timely and efficient manner



## Years 2 and 3

Change narrowly, simply defined problems of practice to issues or questions that more accurately reflect complexities of teaching and learning

Sharpen focus on mathematics and shift away from generic problems of practice

Emphasize use of NCTM process standards when defining problems of practice

Move from *proving* effect in short time frame to *understanding* aspects of teaching or learning

Encourage risk taking



## Year 4 Progress

- Specific mathematical topics in focus
- Research questions about math teaching and students' learning
- Evidence from multiple data sources used to answer research questions (e.g., student work, student interviews, surveys, teacher journal)
- Deeper understanding of problems of practice





## 125 teachers over 4 years

- Cooperative Learning in the Mathematics Classroom
- Increasing Algebraic Concepts in Fifth Grade Mathematics
- Strengthening Student Understanding by Implementing Rubrics to Provide Effective Feedback Oral Presentations
- Exploring the Use of Manipulatives in 8<sup>th</sup> Grade Mathematics
- The Use of Vocabulary and Writing in 7<sup>th</sup> Grade Mathematics Class to Increase Students' Problem Solving Skills: Reasonable or Not?
- A Study of the Use of Teacher Questioning to Promote Reasonable Mathematical Answers From Sixth Grade Students' Homework
- Reviewing, Rethinking and Revising the Expectations of a 7<sup>th</sup> Grade Math Class and their Teacher



## What next?

### Deepen teachers' understanding of inquiry

- from inquiry as a project with a beginning and an end to a stance or way of being as a teacher
- from inquiry as a requirement for a course to meet an instructor's expectations to a resource for practice to help teachers enrich their understandings of mathematics, teaching, and student's learning to inform decision making



## Other versions of inquiry

- Child study projects
- Plan, teach, reflect on series of math lessons
- Family projects (two iterations)
- Modified lesson study cycles
- Study groups



## Resources for you:

Sample projects

<http://scimath.unl.edu/MIM/ar.php>

Action Research course materials

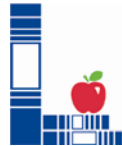
<http://scimath.unl.edu/MIM/coursematerials.php#TEAC888>



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