



Action research projects benefit classrooms

Conducting “action research” may seem daunting, but Dr. Ruth Heaton at the University of Nebraska–Lincoln knows it’s an important tool for helping teachers translate ideas acquired through coursework into classroom practices.

Heaton is an associate professor in the Department of Teaching, Learning and Teacher Education at UNL and is also a co-principal investigator for the Math in the Middle Institute Partnership. She guided the first cohort of Math in the Middle participants through the action research process.

“Teachers are capable of generating knowledge about teaching,” Heaton says. “The important part is for teachers to choose a topic of inquiry that’s important to them and their practice.”

Action research is a process of inquiry. After identifying a problem, the researcher formulates a question, develops a plan for data collection, gathers and analyzes data, and reflects on the results. This reflection then leads to a plan for the next action. Action research involves deliberate planning and critical reflection; it relies on the collection and analysis of evidence rather than on commonsense impressions of a situation.

Working with Heaton, Math in the Middle teachers first identified a “problem of practice” in their own classrooms. They reflected on specific instances of tension between what they wanted to have happen in teaching, learning or assessing mathematics and what actually happened in their classrooms. The projects revolved around common themes including: problem solving, student engagement, students’ attitudes toward math, cooperative learning groups, homework, student self-assessment, curriculum coherence across grade levels, teacher staff development, departmentalization and de-tracking, and student oral and written communication.

Participants then studied their questions by collecting a wide array of data such as a personal teaching journal, student interviews, student work, videotapes of class instruction, adult interviews, student and adult surveys, student self-assessment instruments, student self-reflection, and a variety of assessment data.

After reflecting upon their findings, teacher-participants wrote papers discussing their identified problem of practice and the process, findings and conclusions of their studies.

Because the projects received approval from the university’s Institutional Review Board, the teachers will be able to share their work. In the next few months, these papers will be available on the Math in the Middle Web site at: <http://scimath.unl.edu/MIM>.

Teacher Gary Furse says he gained insight into his teaching from his action research. “My project let me observe how my students learned to solve difficult math problems. Because of the systematic approach that conducting action research demanded, I found I was able to observe specific instances where my students achieved that ‘aha’ we teachers want for so many of our students. The results inspired me to continue my action research project this year.”



Another Math in the Middle teacher, Janet Schlattmann, also benefited from her action research project. “I learned that data can sometimes give you a different perspective on what is happening in the classroom instead of relying on just feelings. I found that students who were in my lower-achieving class were making more progress than I had supposed.”



“I would encourage others to conduct action research,” Schlattmann says. “The research can help you see if what you are doing is effective or what you are trying to change is making a difference.”

Heaton agrees. Any teacher interested in action research can identify a complex problem that’s a part of teaching or student learning and make a plan for systematically collecting data that helps study the problem.

“The outcome could be an answer to the problem,” she says, “but more than likely, the outcome is a better understanding of the problem.”



Math in the Middle graduates to present action research projects

Seven recent graduates of Math in the Middle will present their action research projects at a Saturday, Nov. 18, student research conference sponsored by the College of Education and Human Sciences at the University of Nebraska–Lincoln. The daylong event at Teachers College Hall on City Campus will provide students with an opportunity to showcase their work and to talk with colleagues about important education issues.

Math in the Middle presenters and their topics include:

- **Gary Furse** studied the impact of student self-assessment and reflection on his math students' abilities to solve deep-thinking math problems. He investigated the way informal self-assessments and self-reflections impacted student learning and motivation.
- **Karen Hillen** investigated the effects of increased student discourse and cooperative learning on the students' abilities to explain and understand math concepts and problem solving, as well as its effects on their use of vocabulary and written explanations.
- **Kristin Johnson and Anne Schmidt** examined the direct teaching of problem solving strategies to low-achieving students, the affect academic achievement has on these students, and students' perceptions of themselves as problem solvers.
- **Laura Parn** explored student engagement levels in the classroom, with a specific interest in how to raise the levels of engagement which students demonstrated before the study.
- **Janet Schlattmann** investigated how requiring written explanations of problem solving would affect students' abilities to problem solve, their ability to write good explanations and how it would affect their attitudes toward mathematics and problem solving.
- **Danielle Swanson** studied how math anxiety relates to student work and behavior in the classroom and how this can affect the student's overall relationship to mathematics.

The public is invited to attend. Other Math in the Middle graduates will participate in a poster session.

Now accepting applications

The Math in the Middle Institute Partnership seeks middle-level (grades 5-8) teachers desiring to enhance their mathematical knowledge and their teaching of mathematics. It also seeks those teachers committed to building the leadership skills necessary to become teacher-leaders in their schools, districts and Educational Service Units.

Applications are now being accepted for the fourth cohort of the Math in the Middle Institute. Classes are presented during three summers and two academic years in a combination of weekly summer courses, online courses and one, weekend-long meeting each semester. Courses are offered for graduate credit; most students will earn a master's degree.

Application forms are available on our Web site at: <http://scimath.unl.edu/MIM> or from the staff development officer at each ESU.

The application deadline is Monday, Nov. 20. Successful applicants will be notified by the end of December.

NATM announces spring conference

Look for a new twist at the Nebraska Association of Teachers of Mathematics (NATM) spring conference. Designed for pre-service teachers and new teachers, the conference will be held from 8:30 a.m. to 12:30 p.m., Saturday, Feb. 24, 2007, at Lincoln Southwest High School. There will be three sessions for elementary school, three sessions for middle school (5-9) and three sessions for secondary with a follow-up panel discussion.

The conference will feature teachers from Math in the Middle. Some of the topics will include: writing in the mathematics classroom - a form of communication and reflection; how to better prepare for assessment and create a more technologically advanced classroom; using math vocabulary building to increase problem solving abilities in a fifth-grade classroom; geometric constructions with Cabri-Jr. and the TI-83 calculator; setting up a community of learning through habits of mind; and mathematical games that promote critical thinking.

The cost is \$5. Rolls and juice will be served. Look for more information on the NATM Web site:

<http://www.nde.state.ne.us/NMSI/natm/>.