



Math in the Middle

April 2008



Is Cohort 5 Possible?

Announcing the NU-Teach Institute Partnership for Math & Science Teachers, Summer 2008

By Jim Lewis,
Director of the Center for Science, Mathematics, and
Computer Education

Over the past two years, teachers have occasionally asked me whether there would be a “Cohort 5” for Math in the Middle. As you might assume, this is a difficult question. The funding from NSF that we received has made it possible to work with 130 of the finest and most dedicated teachers that I have ever met.

The opportunity presented by Math in the Middle is important – not just for the teachers who participate, but also for the students who have the opportunity to learn from teachers who are intellectual leaders, strong in both mathematical and pedagogical knowledge.

Sustaining Math in the Middle without significant federal dollars is a challenge, but we hope that we have a solution. Starting in Summer 2008, we are introducing “NU-Teach” an ESU-local school district - university partnership whose goal is to provide dependable professional development opportunities for math (and eventually science) teachers in Nebraska. We have reached a 3-year agreement with UNL’s administration to discount the cost of tuition for courses as part of the NU-Teach Summer Institute, and to provide fellowships that will cover the cost of fees. This benefit means that a teacher can take two NU-Teach courses this summer for 2/3 the cost that they would normally incur had they attended summer school and earned 6 hours of graduate credit. (At present, this special pricing is only for courses offered during the summer, but if we are successful in demonstrating that teachers are interested in these courses, we hope to argue for similar discounting during the academic year.)

While the foundation of this program is our Math in the Middle courses, this summer we are expanding to include courses for secondary teachers and computer science. In Summer 2008, teachers will be able to take Math 800T in either Hastings or Norfolk, and take Math 802T in Lincoln. In Fall 2008, we will offer Math 804T (Experimentation, Conjecture and Reasoning), followed by TEAC 800 in

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Math in the Middle Summer Institute Dates

| | | |
|-----------|------------|--------------------------|
| Cohort 3: | June 9-13 | MATH 808T |
| | June 16-18 | Capstone Course (Part 1) |
| | July 9-11 | Capstone Course (Part 2) |
| Cohort 4: | June 9-13 | MATH 805T |
| | June 16-20 | MATH 806T |
| | July 7-11 | STAT 892 |

Math in the Middle Teacher Presents at Mathematics Teacher Preperation Conference

By Sandi Snyder
Shickley Public Schools, ESU 6
Cohort 1



It is not every day that a high school teacher from Shickley, NE has an opportunity to travel to Tucson, AZ. But, this is exactly what happened to me this spring. On a cold, January day, I received an invitation to accompany Michelle Homp to the University of Arizona to talk about Math in the Middle at a meeting entitled “Secondary Teacher Preparation in Mathematics”. Eight presentations were given over the two-day conference held March 7-8. Presenters talked about courses and experiences that have been developed for pre-service and practicing secondary teachers. Actual activities and problems were shared to get a taste of the different courses. Presenters came from Chicago, Michigan, and Massachusetts to name a few.

So many recurring topics came up during the two day conference. The use of Habits of Minds problems was discussed repeatedly. The need to make connections in undergraduate math classes to the actual teaching of the mathematics was also addressed. Not only do students need to see connections of the math being taught to other disciplines but teachers need to see these connections as well. Many of the issues brought up were the same as those discussed in Math in the Middle. It was very evident that how *teachers are taught* and how *teachers teach* is a nationwide concern.

This was a great experience. It was overwhelming to have mathematicians from around the world ask ME questions! There was definitely a lot of math packed into two days, but it was two days I would not trade for anything. I was very thankful to be given such an opportunity because of my experiences with Math in the Middle.

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From Page 1:

Spring 2009.

We envision NU-Teach as a model that can institutionalize Math in the Middle with Nebraska (i.e., local) dollars. We hope that, when financially feasible, school districts and/or ESUs that will support the NU-Teach Partnership (and their teachers) by directing their professional development dollars (perhaps by providing stipends) to teachers taking NU-Teach courses.

We would like to begin by determining how much interest there is in the NU-Teach program. Even if teachers only want to take one or two courses, it is important for us to gauge this interest as we plan future professional development opportunities for teachers. If a group of teachers take both Math 800T (Mathematics as a Second Language) and MATH 802T (Functions, Algebra, and Geometry for Middle-Level Teachers) this summer and continue with Math 804T (Experimentation, Conjecture, and Reasoning) and TEAC 800 (Inquiry into Teaching and Learning) during the 2008 – 2009 academic year, we will seek additional support for teachers willing to make a commitment to continue through completion of the program.

It all starts by asking for your help. Please pass this information along to any teacher who you believe will benefit from one of our NU-Teach courses. An application to determine eligibility is on page 4.

For more information, please visit the NU-Teach Web site at: http://www.unl.edu/gradstudies/teachneb/nu_teach2.shtml

Program Contact:

Shannon Parry, Event Coordinator

Center for Science, Mathematics & Computer Education

Phone: (402) 472-9312

E-Mail: sparry3@unl.edu

Math in the Middle Research Update

By Ruth Heaton

Thank you for your continued support of the research agenda of Math in the Middle. Part of the argument we make for sustaining Math in the Middle is based on what we are able to say we are learning about mathematics teaching and learning based on the data we gather as part of the research agenda.

Thank you to all of you for completing the alternative assessment with your students this spring. And, thank you in advance for submitting a videotape of your teaching before the 2007-08 school year ends.

NU-Teach At A Glance

Cost and Benefits

For Summer 2008, K-12 Nebraska teachers recommended by a participating ESU or local school district will qualify for several benefits. Tuition for NU-Teach courses will be discounted from \$672 to \$537 per three-credit course (a 20% reduction in the cost of tuition); the Office of Graduate Studies will provide fellowships to cover the cost of student fees associated with NU-Teach courses; and no application fee or transcripts will be required to apply for admission to Graduate Studies. When these benefits are combined, a teacher can take a graduate course at a price that is approximately 2/3 the standard cost of in-state tuition and fees. All Nebraska ESUs and local school districts may participate in the NU-Teach Institute Partnership and earn this benefit for their teachers.

In addition to the benefits offered by UNL, ESUs 7, 8 and 9 (who are hosting the courses in Norfolk and Hastings) will support their courses in several ways including offering stipends for participating teachers from their service areas. Contact these ESUs for more information.

Graduate Admission and Registration

NU-Teach is part of UNL's Teach Nebraska program. Jason Cruise in the Office of Graduate Studies will assist teachers in completing an express admission and registration form. To register for a NU-Teach course, contact Jason at (402) 472-2845 or jasoncruise.graduate@unl.edu.

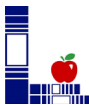
For more information on the Teach Nebraska program, please visit their web site at www.unl.edu/gradstudies/teachneb.

Graduate Credit – Graduate Expectations

NU-Teach courses are offered for UNL graduate credit. Teachers who take a NU-Teach course will be expected to complete an End-of-Course Assignment designed to reinforce what has been learned during the course. Typically, these assignments will be due 4-6 weeks after the end of the course.

Flexible Locations – Field Courses Available

During Summer 2008, sections of Math 800T are offered in Hastings and Norfolk. All other NU-Teach courses will be offered on the UNL campus.



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Summer 2008 NU-Teach Course Offerings

Computer Science

Introduction to CS through Multimedia Computing

Course ID: CSCE 896, Sec. 591, Call #4191

Audience: Secondary science, math, and business teachers who currently teach computing or IT classes.

Dates/Times: June 9-13, 2008; 8:00 am – 5:00 pm

Description: This course will introduce computer science concepts through lectures and hands on programming laboratories and assignments. The focus will be to develop problem solving skills using algorithmic thinking. The topics covered will include elements of good design, loops, function calls, and debugging. Two integral features of this course are: (1) the use of multimedia themes and projects (e.g. modifying pictures, sounds, and movies) and (2) the use of programming language Python.

Mathematics

Mathematics as a Second Language – Field Courses

Course IDs: MATH 800T, Sec. 591, Call #2477

Hosted by ESUs 7 & 8 in Norfolk

MATH 800T, Sec. 592, Call #4291

Hosted by ESU 9 in Hastings

Audience: Although the primary audience is math teachers in grades 3 through 6, this course would benefit any K-8 teacher interested in deepening their understanding of arithmetic and the rational number system.

Dates/Times:

Norfolk: June 23-27, 8:00 am – 5:00 pm; Northeast Community College Life Long Learning Center.

Hastings: June 9-13, 8:00 am – 5:00 pm; ESU #9, 1117 E South St.

Description: Math 800T is based on a course developed for elementary teachers in Vermont and is the first course in the Math in the Middle curriculum for middle school teachers. The course focuses on developing a deep understanding of number and operations. Emphasis is placed on developing an appreciation for the importance of careful reasoning, problem solving and communicating mathematics both orally and in writing. Attention is given to developing the “habits of mind of a mathematical thinker.”

Functions, Algebra and Geometry

Course ID: MATH 802T, Sec. 693, Call #2482

Audience: K-8 math teachers. Note: Math 802T should be accessible to any middle level math teacher and to any elementary teacher who has completed Math 800T.

Dates/Times: July 21-25, 2008; 8:00 am – 5:00 pm

Description: This course is designed to help elementary and

middle level teachers gain a deep understanding of the concept of function and the algebra and geometry concepts taught in the K-8 curriculum. Participants will also study measurement with an emphasis on length, area, and volume. This course is the second course in the Math in the Middle curriculum and has been successfully taught to both elementary and middle level teachers.

Dynamic Chaos and Fractals***

Course ID: MATH 896, Sec. 691, Call #4114

Audience: Math teachers who teach advanced algebra, precalculus or calculus.

Dates/Times: July 14-18 and 21-25; 8:00 am – Noon

Description: The beautiful pictures of Julia and Mandelbrot sets have popularized the term “fractal”. This course is an introduction to dynamical chaos. Goals of the course include obtaining a thorough understanding of the fundamental concepts of limits and iteration and allowing participants to explore the main concepts in dynamical chaos (e.g. repelling and attractive periodic points, sensitivity conditions, capacity and fractional dimensions). Our prize, if time permits, is to learn how to generate and interpret sets that graphically describe fascinating chaotic behavior.

Teaching, Learning and Teacher Education

Advanced Technology for Secondary Mathematics Teachers***

Course ID: TEAC 880P, Sec. 591, Call #4137

Audience: Math teachers who teach advanced algebra, precalculus or calculus.

Dates/Times: July 14-18 and 21-25; 1:00 pm – 5:00 pm

Description: This lab-based course will explore a variety of technologies for teaching and learning mathematics. Problems and concepts from MATH 896 will be used as a starting point for discussions and exploration, as well as Internet sites and “classroom problems of practice” as content sources. Middle school mathematics teachers are welcome in this course. The new free software GeoGebra will be featured for solving problems.

***Math 896 is taught in the morning and TEAC 880P is taught in the afternoon during the same two-week period. Although these are stand-alone courses, a portion of TEAC 880P will focus on using technology to experiment with the concepts and theorems introduced in Math 896. Thus, the paired courses offer an excellent opportunity for a mathematics teacher to earn six hours of graduate credit.



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NU-Teach Institute Partnership Teacher Certification Form

Name: _____

_____ I am a Nebraska K-12 teacher and will register for the following NU-Teach courses.

ESU: _____ District: _____

School: _____

School Address: _____

School Phone: _____ School FAX _____

Home Address: _____

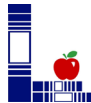
Home Phone: _____ E-mail _____

Current Grade level/position

Signature of Applicant _____

Date _____

This ESU application should be sent to: Shannon Parry, UNL Center for Science, Mathematics and Computer Education, 251 Avery Hall, UNL, NE 68588-0131, or by email to sparry3@unl.edu. We will use this information to confirm your eligibility to receive discounted tuition and the fee fellowship.



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