



Math in the Middle

September 2007



Welcome! After taking the summer off from publishing our newsletter, we are now back on schedule for sending you our monthly updates. Please let us know what topics you would like to see included in future issues. Contact Sharon Penry at spenry2@unl.edu or (402) 472-9312 with news suggestions.

Math in the Middle Graduates Second Cohort

Thirty teachers have recently earned their Master's degrees from the University Of Nebraska – Lincoln as a result of their participation in the Math in the Middle Institute Partnership. Receiving degrees this summer were:

ESU # 7

Shelly Mayo, David City Elementary School, David City
(formerly of Abie Public School)

Carmen Melliger, Aquinas Middle/High School, David City
Dot Snesrud, Osceola Elementary School, Osceola
Janet Timoney, Aquinas Middle/High School, David City
Lori Ziemba, Shelby Elementary School, Shelby

ESU # 8:

Stacey Aldag, Battle Creek High School, Battle Creek
Gary Eisenhauer, Battle Creek High School, Battle Creek
Tom Harrington, Madison Middle School, Madison

ESU #9

Kathy DeLashmutt, Abraham Lincoln Elementary, Hastings
Megan Kelly Abresch, Wallace Elementary School, Hastings
Cindy Steinkruger, Blue Hill Elementary School, Blue Hill

ESU #10

Tricia Buchanan, St. Paul High School, St. Paul
Linda Moore, Lexington High School, Lexington*
Amy Nebesniak, Grand Island Senior High, Grand Island
(formerly of Walnut Middle School, Grand Island)

Tina Thompson, Lexington Middle School, Lexington
Greg Vanderbeek, Sunrise Middle School, Kearney

ESU #11

Dan Schaben, Arapahoe High School, Arapahoe (formerly of Orchard Public School, ESU #8)

ESU #13

Carol Brown, Alliance Middle School, Alliance
Chad Larson, Bluffs Middle School, Scottsbluff
Shana Streeks, Bluffs Middle School, Scottsbluff

ESU #16

Christy Sheets, Wallace High School, Wallace

LPS (ESU #18)

Rachel Bunnett, Fredstrom Elementary School, Lincoln
Jessica Fricke, Irving Middle School, Lincoln
Shauna Green, Irving Middle School, Lincoln
Lisa Henjes, Culler Middle School, Lincoln (formerly of Dawes Middle School, Lincoln)

Karen Schur, Sheridan Elementary School, Lincoln
Josh Severin, Scott Middle School, Lincoln*

Diane Swartzlander, Goodrich Middle School, Lincoln
Lindsey Thompson, Mickle Middle School, Lincoln
Andrea Wiens, Lux Middle School, Lincoln

* Graduated December 2006, though recently completed Math in the Middle coursework.

Math Teachers' Circle



Lincoln Area Teachers' Circle Team
From left to right: Cheryl Miner, Steve Dunbar, Julie Kreizel, Sue Graupner, and Anne Schmidt

New program brings together research mathematicians and middle school math teachers to improve students' problem solving skills.

Two Math in the Middle graduates (LPS teachers, Anne Schmidt and Julie Kreizel) have joined with Sue Graupner (LPS mathematics specialist), Steve Dunbar (UNL mathematics professor) and Cheryl Miner (Nebraska Wesleyan mathematics professor) to create the Lincoln Area Teachers' Mathematics Circle.

A Teachers' Mathematics Circle is a group of teachers and mathematicians who join together to learn interesting mathematics through problem solving. While the joy of learning new mathematics is one of the goals of the Teachers' Mathematics Circle, according to Graupner, there will be a special focus on learning mathematics that teachers can use in their own classroom. The Lincoln Area Circle has been designed to appeal to middle-level mathematics teachers who are interested in learning mathematics for enlivening their math classes.

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The Lincoln Area Teachers' Mathematics Circle began when the Lincoln group applied to and was selected for a summer workshop run by the American Institute of Mathematics (AIM), one of the leading mathematics institutes in the U.S. In the summer of 2007, the Lincoln group traveled to Palo Alto, California, to learn more about how to create and sustain a Teachers' Circle as a partnership between school teachers and collegiate mathematicians. While AIM's program was focused on working with specific school districts, the Lincoln group made it clear that they wanted to create a Teachers' Mathematics Circle that was open to any mathematics teacher within driving distance of Lincoln.

"Our focus is on problem solving and learning how to craft solutions to problems," said Joshua Zucker, one of the organizers of the AIM workshop. He went on to explain, "An exercise is something where you already know what to do and you just have to go through the motions. Exercises are boring. A problem is a challenge where you have to first figure out how to approach it. That is what we want students to learn, and the Circle helps the teachers bring this into the classroom."

The first meeting of the Lincoln Area Teachers' Mathematics Circle was held at the LPS District Office on Thursday, September 13, 2007, from 5:00 p.m. to 8:00 p.m. Because of the sponsorship support that was available, participants enjoyed a catered dinner in addition to learning mathematics.

At the first meeting, mathematicians Steve Dunbar and Cheryl Miner led an activity that enabled participants to learn about "Rational Tangles". The idea was to associate a fraction with a tangle of two ropes created by performing a sequence of two simple operations ("twist" and "rotate"). The highlight of the evening was when a sequence of the operations led to a very tangled pair of ropes and then a teacher specified a sequence of arithmetic operations ("adding one" and "negative reciprocal") for which the corresponding operations untangled the ropes.

For more information about the Lincoln Area Teachers' Mathematics Circle, go to the web site, <http://www.nebrwesleyan.edu/people/cminer/teachercircle.html>. The next meetings of the Teachers' Circle will be October 11 and November 8. If you are interested in participating, contact Sue Graupner at sgraupn@lps.org.

The Lincoln Area Teachers' Mathematics Circle is made possible by the joint sponsorship of the American Institute of Mathematics, the UNL Center for Science, Mathematics and Computer Education, the Lincoln Public Schools, and ESU #6.



Lincoln Area Teachers' Mathematics Circle In Action

Top picture: (from left to right) Connie Peterson (LPS), Kristin Johnson (LPS), Barb Miriovsky (LPS)

Middle picture: Michael Cobelens (Waverly), Mary Ann Stallings (LPS), Myrna Bornemeier (LPS), Lenny VerMaas (ESU6), Cheryl Miner (NWU), Steve Dunbar (UNL)

Bottom picture: Patience Fisher (UNL), Sandi Snyder (Shickley), Tiffany Lothrop (Crete)



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NAEP 2007 Results Released

On Monday, September 24, 2007, the U.S. Department of Education released the results of NAEP 2007, also known as "The Nation's Report Card." While our focus in this article will be on the mathematics scores for 8th grade students, by going to <http://nces.ed.gov/nationsreportcard/>, one can find a wealth of information about how 4th and 8th grade U.S. students are doing in math and reading. The web site also has information that is specific to each state and information that compares state results.

The big picture summary of the results is that "Test scores among 4th and 8th graders across the United States rose in both reading and mathematics ..." In particular, in mathematics the gains continued an overall upward trend in NAEP math scores in both grades that dates to the early 1990s. While the gains from 2005 to 2007 were smaller than in some previous testing cycles, they were still statistically significant.

This is, of course, good news, but a closer look at results for Nebraska does not provide good news. Much like a football team that has clearly improved but loses games because other teams have improved even more, Nebraska 8th grade students have improved since the early 1990s, but relative to students in other states, we seem to be losing ground. It is time to ask, "Can't we do better?"

For those who are unfamiliar with NAEP, it is a substantial undertaking. NAEP 2007 involved 14,750 schools and over 350,000 students. Because of the breadth of the content covered, each student takes only a portion of the NAEP assessment. It involves both multiple-choice and open-ended questions. Students are permitted to use calculators on approximately one-third of the test. This approach does not provide information about specific students or schools, but it should provide very good information about what students in the U.S. or an individual state are capable of doing.

NAEP mathematics results are reported on a 0-500 scale. Using these scores, the National Assessment Governing Board sets specific achievement levels that students must meet to be at or above the Advanced, Proficient or Basic level. Basic denotes partial mastery of knowledge and skills that are fundamental for proficient work at a given grade level and Proficient represents demonstrated competency over challenging subject matter, while Advanced represents superior performance.

All of the data in this article is for 8th grade students who attend public schools. (Nationally, 91% of 8th grade students attend public schools.) In 1990, the national average for 8th grade students was 262. At the time, Nebraska looked very good with an average of 276 -- 14 points above the national average. This level of achievement ranked Nebraska 4th among 37 states that participated in the assessment. For 2007, the national average was 280, 2 points higher than in 2005, and the average for Nebraska was 284, the same as in 2005. Thus, while Nebraska students still score above the national average, the margin had dropped from 14 points to 4 points. Moreover, on a state-by-state basis, Nebraska ranks 24th among the 50 states. (For 2007, all 50 states participated and met participation rate standards.)

Using the NAEP achievement levels, 74% of Nebraska 8th grade students meet or exceed the Basic standard and 35% meet or exceed the Proficient standard, as compared with 70% and 31% nationally. Again, Nebraska students score higher than the national average, but, the national improvement over the past 17 years (19 percentage points) is much greater than the improvement in Nebraska (6 percentage points).

If one disaggregates data by race and ethnicity, the news for Nebraska is even worse. Among White students, Nebraska scores one point above the national average (291 vs 290) and ranks 22nd as a state. Among Hispanic students, Nebraska is three points below the national average (261 vs 264) and ranks 30th out of 42 states for which the sample size of Hispanic students is sufficient to permit a reliable estimate. Among Black students, the results are a disaster. Nebraska is 19 points below the national average (240 vs. 259) and ranks last among the 40 states for which the sample size of Black students is sufficient to permit a reliable estimate.

By accessing the web site previously cited, one can find significantly more information about student performance on the NAEP assessment at both the 4th and 8th grade in Nebraska and nationally. For example, if one ignores simple linear rankings and looks to see where there is a significant statistical difference in state scores, one learns that at the 8th grade level, only 12 states are statistically higher than Nebraska, scores for 17 states are essentially the same, and 20 states are statistically below Nebraska. Regardless of this finer detail, it seems unavoidable to conclude that Nebraska 8th graders are, at best, average in mathematics, and we are especially poor at educating minority students.

I would be delighted to learn that there are many schools that are doing much better than this statewide profile. And, I would be very interested in any insights you may have as to why Nebraska has not improved at the same rate as the national average over the past 17 years. As a start, I hope you will join me in asking, "Can't we do better for all Nebraska students?"

Jim Lewis CSMCE Director

Nebraska Association of Teachers of Mathematics October 1st Election Results

- President:** Dan Schaben, Arapahoe-Holbrook Public School, Arapahoe
- 1st Vice President:** Tami Worner, Wayne State College, Wayne
- 2nd Vice President:** Kristin Pfabe, Nebraska Wesleyan University, Lincoln
- Secretary:** Lanette Von Seggern, Pender Public School, Pender
- Region 1 Representative:** Chad Larson, Bluffs Middle School, Scottsbluff
- Region 2 Representative:** Terri Glesinger, Kearney Public School, Kearney
- Membership Chair:** Erin Hamilton, Friend High School, Friend

<http://www.natmonline.org/>



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