



Mathbits

Minnesota Council of Teachers of Mathematics

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Fall Conference Keynote Address



Dr. Judith O'Fallon

Dr. Judith O'Fallon, the keynote speaker at the MCTM fall conference, wears many hats. In her talk entitled "Rewarding Careers in Biomedical and Environmental Research," she brought the audience from her first role in education (as a student in the Minnesota public schools) through motherhood and graduate school to her current roles as a professor of biostatistics at the Mayo Graduate School of Medicine and a member of the Mayo Clinic Cancer Center Statistics Unit in Rochester, Minnesota. Dr. O'Fallon offered a sometimes humorous and sometimes serious look at cancer research, all the while stressing the need for strong skills in mathematics, science, and English, as well as the ability to work as part of a team. Her address illustrated how these content areas and personal skills are utilized daily in medical research. In her comments on a K-12 statistics curriculum, Dr. O'Fallon said it was important to include the process of setting up a statistical study: consideration of the key question, the endpoints of the key question, the population needed, biases, and other aspects particular to the study. Dr. O'Fallon encourages young people who like to work as part of a team and who enjoy science, mathematics, English, and problem solving to consider a career as a biomedical or environmental researcher.

Fall Conference Highlights

Approximately 800 mathematics and science educators participated in the Fall Conference on October 18, 2002 at Eastview High School in Apple Valley. The theme of the conference, "Science and Mathematics: In the Classroom and Beyond," was developed in one hundred different sessions held throughout the day. Session topics were varied and included all areas of mathematics from basic arithmetic to calculus. Participants heard experts discuss federal legislation and its implications, current data on student achievement in NSF math programs, and the Minnesota Comprehensive Assessment (MCA) for mathematics. Educators interested in technology could choose from sessions that focused on learning activities that incorporate computer applications and software, calculators, and internet web sites. The three hundred pre-service mathematics teachers in attendance were delighted to find sessions designed especially for them. Over thirty vendors displayed a variety of educational opportunities and materials including textbooks, manipulatives, technical instruments, and professional resources. While vendors, sessions, and colleagues provided intellectual stimulation, Panera Bread provided physical sustenance in the morning with gallons of coffee and juice, sweet rolls, and bagels, and in the afternoon with delicious boxed lunches. It was a full day of professional enrichment and socializing.

State Mathematics Specialist Report

11th Grade Mathematics MCA

The results of the first 11th grade mathematics Minnesota Comprehensive Assessment were released on October 1. The results are available on the Minnesota Department of Children, Families and Learning website at <http://www.cfl.state.mn.us>

For the first time Minnesota has statewide information about students' participation and outcomes in high school mathematics. It raises issues around how much mathematics students are studying, what mathematics students are studying, and the achievement of students in mathematics.

The report provides a variety of information and resources. There are descriptions of levels of achievement in the test, which are illustrated by sample items. It reports patterns of participation and outcomes and provides graphical displays of individual district data comparing patterns of participation and outcomes with statewide patterns. It also provides data tables providing disaggregated information at both the district and state levels.

The test data suggests three clusters in terms of exposure to mathematics; students with more exposure to mathematics (36259 students), students with some exposure to mathematics (4730 students), and students with little exposure to mathematics (13794 students). The report provides further definition of these clusters in terms of the content standards. The results are consistent with other studies of high school mathematics; students with more exposure to mathematics achieve reasonably well on average, while students with little exposure to mathematics do not do well on average.

The disaggregated data shows clear differences among groups of students in terms of exposure to mathematics and achievement. For students with similar recorded participation patterns, there are strong differences in outcomes according to ethnicity, gender, and socio-economic status as measured by free and reduced lunch.

The data do not, and cannot, show why these differences occur. However, it does suggest some important questions and should serve as a catalyst for discussions in individual districts around:

- What groups of students are studying mathematics?
- What is the nature of the mathematics that is being studied by each group?
- What might be reasons for differences in the exposure to mathematics for different groups of students in our district?
- What groups of students are achieving well in mathematics in our district?
- If there are differences in achievement between groups of students, what might be reasons for this "achievement gap?"

Addressing issues raised in these questions will not be easy. However, they must be addressed if we are to be true to the vision of a quality mathematics education for all students. Focusing on the expectations we hold for all students and the instruction we provide them seems to be a good jumping off point for the necessary discussions. As leaders in your school and district, I encourage you to be the ones to begin the discussions in your district around what the 11th grade mathematics MCA data tells you about your mathematics program.

Tom Muchlinski
State Mathematics Specialist