



Spring 3-9-1993

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Recommended Citation

Aaron, Bob, "From Chocolate Fondue to Japanese Yen" (1993). *News and Events*. 6159.
<https://digitalcommons.iwu.edu/news/6159>

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March 9, 1993

Contact: Bob Aaron, 309/556-3203

From Chocolate Fondue to Japanese Yen
IWU Students Give New Look to Junior High School Math Class

BLOOMINGTON, Ill.—Room 136 at Bloomington Junior High School will be the site of an experiment in teaching math March 12—an experiment that will bring together 15 seventh graders and three Illinois Wesleyan University student-interns.

The experiment, part of a four-pronged Math-Science Initiative (MSI) spearheaded by IWU's Education Department, is designed to offer youngsters, ages 12 and 13, new approaches to mastering math that reinforce learning from more traditional classroom methods.

The initiative, which began last fall, injects into math studies other subjects—such as geography and English—and takes a hands-on approach, involving everything from fondue and computers to the Japanese art of paper folding, to help junior high school students master mathematical functions, concepts, and terminology.

On March 12, the junior high schoolers will be taking a unique look at mathematics from the multicultural perspective, using the Japanese art of origami, a technique of folding paper into decorative and representational forms often involving flowers or animals.

"Paper folding helps students gain a better understanding of geometric concepts and fractions," explains Diana McCauley, a visiting professor of education at IWU and director of the MSI project. "This hands-on approach to studying math gives students a better feeling for relationships—it makes math less abstract and easier for students to conceptualize."

It also introduces into the study of math, according to McCauley, a better understanding of the contributions various cultures have made to mathematics. For example, students are introduced to the abacus, an ancient counting device still widely used in the Orient, and the role of the ancient Greeks in the development of geometry.

This semester, six IWU students are participating in the "Just-For-The-Fun-Of-It" program, which is one portion of the four-part MSI program. Of the six interns, three are education majors, while some of the others are leaning toward

sociology or the social sciences. The interns--five females and one male--include four freshmen and two juniors.

"The IWU interns," McCauley said, "are work-study students. They are paid interns doing public service-type work as part of their financial aid package at Wesleyan.

"Initially," McCauley said, "I had reservations about the students wanting to work on this project. Most work-study jobs involve office work--doing mailings or typing, for example--and when they leave the office, the job is done. But for the MSI program, the students are facing a more involved work situation --and a stronger commitment--because in addition to the time they spend in the classroom, they also have to spend time preparing for class.

"But the IWU students think it's fun. They like the experience of working with children. They also are developing their own social skills by working together with other students--and everyone has clear-cut responsibilities. Many friendships have developed between the IWU interns and the students."

The IWU student-interns are: Kathy Bouchard, Morton, Ill.; Meg Bradley, Naperville, Ill.; Judy Hoffmiller, Rock Falls, Ill.; Joseph Peck, Glen Carbon, Ill.; Tracey Swarts, Dixon, Ill.; and Christine Tyderek, Lansing, Ill.

In the classroom, the student-interns serve as facilitators, who try to get discussions going. They are not teachers or instructors. The IWU students meet with McCauley on Mondays to work out lesson plans and do dry runs so that they can be as prepared as possible for what they will encounter. The interns' lesson plans are closely linked to what the students are learning in their regular classes. Each week, the students work with two randomly selected groups of junior high schoolers, during what is known as "E and R" period--Enrichment and Re-teaching, a time slot on all student schedules where they can brush up on different courses.

Three IWU students are at Bloomington Junior High every Tuesday and another three are at the school every Friday. The six student-interns work with about 30 students, so there's a ratio of one IWU student-intern to every five junior high schoolers.

As part of the hands-on approach to math, McCauley and her interns have used everything from marshmallows and fondue to Japanese yen to convey mathematical concepts.

"When the junior high school students were working with fractions in their regular class," McCauley explained, "we decided on 'fraction fondue' to help

reinforce what the children were learning in class. We melted chocolate and fondued marshmallows, apples, pears, bananas, and graham crackers in an exercise designed to help the students figure out how many times they had to cut something—like an apple—so that everyone in the class got a piece. They also worked with fractions in terms of weighing various items."

In another hands-on exercise, with a multicultural dimension, the students learned some basic mathematics doing currency conversions, using Japanese yen, borrowed by McCauley from Yoko Ronchkovsky, manager, general affairs, at Bloomington-Normal's Diamond-Star automobile plant.

"The student-interns," McCauley explained, "used computerized materials available at IWU's high-tech interactive learning center to gather information about Japan. They also got wall-size maps of Japan for the junior high school students.

"The math problem we worked out went something like this," McCauley added. "A group of youngsters from Bloomington would go on a trip to Tokyo. But they had to leave behind one of their good friends and they wanted to call this friend from Japan on his birthday at 6 p.m. Central Standard Time—so they had to become familiar with time zones. They were given 63,000 yen for the trip—and they had to convert that back-and-forth between dollars to yen. They had to figure out if they had enough money for the 14-day trip since they were allowed to spend \$25 a day, and they had to pay for their 'birthday phone call', and they had to buy their friend a birthday gift.

"This was a very interesting exercise," McCauley said, "especially since some of the youngsters had never seen foreign currency. It really was a good example of using math to bridge two cultures."

The three other parts of MSI are:

- Adopt-A-School, an effort where volunteers work with District 87 elementary schools, particularly in math and science education. All of the volunteers are IWU students. Volunteers, for example, have been recruited to work on a Science Fair at the Irving School.

- Computer Bucking, a program on a half-dozen Saturdays in October, November, December, February, March, and April, where honor-roll students come to IWU and explore various computer software in IWU's Buck Interactive Learning Center. Mentors from State Farm, General Electric, GTE, and elsewhere work with the students and later this month the students will visit various corporate sites.

- Family Math Workshop, an activity slated for next month at Eastland Mall designed to show parents how math can and should be learned by using everyday objects and how they can stimulate math interest in their children. IWU students, enrolled in an elementary education methods course, will play a key role in devising various demonstrations as part of a class project.

The MSI program is an outgrowth of a program sponsored last year by IWU, the *Pantagraph* newspaper, and community groups, to bring honor students from the minority community to IWU for academic enrichment activities largely using the university's computer facilities.

McCauley, a native of Philadelphia, is a graduate of Cheyney University in Pennsylvania, where she was an elementary education major and math minor. Following graduation from Cheyney, she was recruited by Temple University in Philadelphia for a special master's program in math, designed to help prepare teachers for inner-city assignments. She earned a doctorate in educational administration at Temple. McCauley taught in Philadelphia for two years, before joining Villanova University, where she worked with high-risk students. When McCauley left Villanova after 18 years, she was assistant dean of the College of Arts and Sciences. She also has taught at the Tredyffrin-East Town Middle School in Berwyn, Pa.

Editor's Note: The IWU student-interns will be in the classroom at Bloomington Junior High School, 901 N. Colton, March 12, from 10:30-11:12 a.m. IWU interns are at Bloomington Junior High School every Tuesday and Friday. For more information about the Math-Science Initiative (MSI), call: Diana McCauley, a visiting professor of education at IWU and MSI project director, 309/556-3504.