



# Rice University School Mathematics Project

## PROGRAM DESCRIPTION

### *Content*

- problem-solving skills
- using manipulatives
- using technology
- student-centered instructional strategies
- reflective practice
- lesson design

The Rice University School Mathematics Project (RUSMP) provides training for Houston-area mathematics teachers to improve, deepen, and expand teachers' content and pedagogical knowledge of mathematics. The program was initiated in 1987 to serve as a bridge between Rice University's mathematics research community and Houston-area mathematics teachers.

The program involves three distinct components. First, the Summer Campus Program is a four-week professional development in mathematics content and delivery for teachers in grades K-12. Second, the School Year Campus Program involves university courses taught at Rice University. The courses are specifically designed for teachers of mathematics. Third, Urban School Programs are year-round school-based programs in which support-teachers interact with mathematics teachers and their students in a given school.

The Urban Schools Program also includes a four-week summer school session for at-risk students. District personnel arrange the site and select the students and teachers. RUSMP staff designs the curriculum and trains RUSMP support-teachers. RUSMP support-teachers help teachers: create a student-centered curriculum and activities that use calculators, computers, and other manipulatives; design mathematics projects; and use alternative assessments.

### *Context*

- urban middle school
- largely minority student population
- large percentage of low-income students

## PROGRAM CONTEXT

RUSMP's Urban Program was conducted first in Houston Independent School District's North Central District. Fifty percent of the students in HISD are Hispanic, and 36 percent are African American. The majority of the students are of lower socio-economic status, were at-risk students, and had already failed two of more years of school. Approximately 400 students attended the program over the three years and were taught by 21 mathematics and language arts teachers with a student-to-teacher ratio of approximately 10:1.

## STAFF DEVELOPMENT PROGRAM



The staff development used in RUSMP's Urban School Program is an example of job-embedded staff development. It involves a preliminary training program and ongoing support and coaching throughout the school year.

Teachers who participate in the Urban School Program attend a three-day preparation program prior to the beginning of summer school. In this program teachers are given the opportunity to experience the learning activities students would experience during the first week of school. Support teachers model the lessons, demonstrate the classroom environment that supports hands-on learning, and encourage teachers to participate as students.

Following the three-day preparation program and a fairly well-prepared first week's curriculum and instructional activities, teachers are responsible for planning the remaining weeks' curriculum, instruction, and assessment. They work used by other teachers. Each team holds a day-long inservice presentation on their curriculum. Each Friday, a teaching team presents its curriculum in a training format to the other teams. While the number of learning activities included in the Friday sessions usually exceeds what teachers can do within a week, these sessions are designed to give teachers choices of other activities to take into the academic school year.

Support teachers visit each teacher's classroom to provide ongoing coaching and feedback throughout the subsequent school year. They also provide demonstration lessons, co-teach with the teacher, and help solve problems related to curriculum, instruction, and assessment. Through ongoing dialogues, teachers are given opportunities to discuss their experiences with the new instructional processes and reflect on what works for them and their students.

### *Process*

- training
- demonstrations
- modeling
- classroom coaching

Mathematics

### *Intended Audience*

- entire school
- entire department
- individual volunteer teachers

## SUMMARY OF RESULTS

RUSMP increases student academic achievement in mathematics as a result of teachers' learning to use new instructional strategies in their classrooms with the assistance, guidance, and feedback from support teachers.





## SAMPLE SITES



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## DOCUMENTATION

Papakonstantinou, A., Berger, S., Wells, R.O., Jr. & Austin, J. (1996, Nov-Dec). The Marshall Plan: Rice University Mathematics Affiliates Program. *Schools in the Middle*, 4, 39-46.