



Middle Grade Mathematics Renaissance

PROGRAM DESCRIPTION

Content

- reform mathematics
- instructional strategies
- teacher leadership
- coaching
- replacement units
- debriefing sessions
- sustained time for professional development
- high quality instructional materials

The goal of the Middle Grade Mathematics Renaissance is to help schools transform their mathematics programs so that all students — especially those from groups whose mathematics achievement has historically lagged — become empowered mathematically. During its five years as a component of California’s State Systemic Initiative, more than 500 schools, including 2,500 math teachers, participated in intensive, school-based, professional development. This represents nearly 50 percent of the state’s middle schools. Thirty-eight percent of schools in the Renaissance were involved for three or more years. Statewide, 74 percent of Renaissance districts had 100 percent of their middle schools participating. The Mathematics Renaissance program has now expanded to work with teams of schools in a vertical slice K-12.

Professional development is the cornerstone of the program and includes content, pedagogy, use of instructional materials, and leadership development consistent with the 1992 California Mathematics Framework and the National Council of Teachers of Mathematics (1989) Standards. Through in-depth and long-term work, teachers discuss mathematics reform, experience hands-on mathematics, learn how to teach new curriculum “replacement” units, and explore the conditions that create opportunities for learning.

Context

- diverse school settings including urban, rural, and suburban schools
- diverse student populations including high-minority and low-income populations

The focus of the work is at the school level rather than at the level of the individual teacher. Renaissance staff believe that, by working with the school as the unit of change, a process will emerge that sustains reform efforts beyond the life of the program.

PROGRAM CONTEXT

Mathematics Renaissance schools represent a broad range of school contexts. Some schools have large minority and economically disadvantaged student populations while others have fewer minority students.

STAFF DEVELOPMENT PROGRAM



Mathematics Renaissance provides both statewide and local leadership. Ten full-time regional directors coordinate the unique projects in their individual regions. Each regional director is responsible for seven “clusters,” each of which comprises five schools. In collaboration with and under the guidance of the regional director, the direct work with the teachers in these clusters is done by a team of teacher leaders called “cluster leaders.” They are classroom teachers with personal experience and credibility to help their peers change classroom practice.

Direct work with schools and teachers is done on a year-round basis, with 8 to 12 days during the school year and intensive summer (or off-track) work. Schools participate for a minimum of three full years. The combination of learning experiences allows time for teachers to address a wide range of issues. Teachers discuss current research on learning and effective instructional strategies, debate the nature of mathematics, and redefine basic skills. They are involved with the other schools in their cluster in a learning community. They experience first-hand the curriculum reform by learning how to teach new state-of-the-art curriculum “replacement” units. After trying these units out in their classrooms, they debrief with other network members.

In addition, teachers receive in-class support. Cluster leaders visit each school several times during the year. Teachers are encouraged to collaborate with colleagues by peer coaching. Regional directors work with administrators to explain how they can best support their teachers through the process of reform.

Districts provide time for professional development in a variety of ways. Math Renaissance activities take place on student release days, on regular school days with substitutes provided for teachers, and/or on afternoons, weekends, and in summer institutes where teachers are provided stipends.

SUMMARY OF RESULTS

Mathematics Renaissance has positively impacted student achievement in mathematics and teacher instructional behaviors, and influenced district policy regarding curriculum and instructional materials.

Process

- training
- curriculum development
- coaching
- replacement units
- sustained time for professional development
- connection to research on learning and teaching

Intended Audience

- entire school
- entire department

EVIDENCE OF INCREASED STUDENT ACHIEVEMENT



Success Indicators

- New Standards Exam in Mathematics
- case studies



Mathematics Renaissance student performance was assessed in a subset of classrooms across the state of California. The 1994 New Standards Reference Exam was administered in the spring of 1995. Students in the Renaissance sample participated in two days of testing on a range of performance tasks of 5, 15, and 45 minutes in duration. The exam was scored by Renaissance staff and teachers using New Standards scoring rubrics during a summer professional development seminar.

Analyses of the scores were performed by New Standards staff. In the analyses, Mathematics Renaissance students consistently scored significantly higher than the multi-state comparison group. Overall findings indicate that there is strong, statistically significant evidence that students in the Renaissance sample performed at higher levels on all aspects of the New Standards exam, including skills, concepts, and problem-solving. This is especially noteworthy given the demographics of the Renaissance and multi-state comparison groups. The Renaissance sample schools were composed of more students from groups historically under-represented in mathematics classes.

The professional development resulted in significant changes in classroom practice, documented by case studies, school profiling, survey data, and the SRI case study evaluation. The SRI case study draft (April, 1996) indicated that “there is ample evidence that practice is changing in many classrooms.” It observed some common themes in terms of teacher changes: active student participation, teacher as facilitator of student learning, real mathematics, a view of mathematics as a process, and a commitment to equity.

Middle Grade Mathematics Renaissance is an extensive project designed to help individual schools improve instruction in mathematics. Its unique design, which entails working at the school site within a network of collaborative schools, sets it apart from other efforts. Middle Grade Mathematics Renaissance has demonstrated that it increases student learning as measured by assessments designed to evaluate the application of mathematics in authentic settings.

THE BOTTOM LINE



SAMPLE SITES



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DOCUMENTATION

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