

# Appendix D

## Findings from the Grade 10 Exploratory Study

**Preliminary Findings**

**Major Issues**

**Recommendations**

## Preliminary Findings

The sample used in this exploratory study was very small—four teachers and two school sites within a single district—and thus the data cannot be generalized at all to the larger population of high school mathematics teachers. Nonetheless it is interesting to note several themes that emerged through interviews of the teachers, their department chairs, and principals:

Articulation is an important issue for high school mathematics teachers. Teachers are concerned with vertical articulation, such as how middle schools prepare students for success in high school mathematics and how content flows from course to course within the high school program. Teachers' decisions about pacing and emphasis of topics are also affected by horizontal articulation stemming from departmental agreements about scope and sequence of individual courses.

A great deal of collaborative planning and sharing of materials exists within mathematics departments.

Professional development opportunities are valued as long as they do not take teachers away from their classrooms; the previously funded staff development days are missed.

Teachers' practices have been greatly influenced by national forces such as the NCTM Standards, listserves for calculus teachers, and the online Math Forum at Swarthmore.

High school teachers are familiar with the pressures of several accountability forces: WASC accreditation, college entrance requirements, the mathematics portion of the Scholastic Aptitude Test (SAT), Golden State Exams, the state's STAR program and SAT-9, the upcoming high school exit exam, and teachers of the next course.

The ninth-grade class size reduction policy has had a positive impact on Algebra classes.

High school mathematics teachers are quite articulate when describing how they decide what they are going to teach in a course and how they determine the emphasis to be placed on particular content or processes.

## Major Issues

A major issue for conducting a study at the high school level is whether to focus on the grade level, such as tenth grade, or on a single course. If the focus were to be on tenth grade, then the study would provide a snapshot of the various mathematics courses in which tenth grade students enroll and the data from the mathematics portion of the tenth-grade (base)

SAT-9 could be used. In such a study, however, specific teacher attribution for student achievement would not be possible because the test does not reflect the curriculum of individual courses. If the focus of the study were to be on a course in which many tenth-grade students are enrolled, then data concerning teacher practice, materials, and policy influences are easier to compare. Also, student data from the augmented portion of STAR might be useful for relating student achievement to instruction. However, the augmented tests are not norm-referenced, and the (base) SAT-9 would still not be useful for correlating instructional practice to achievement.

Another issue for a grade 10 study involves the growing number of high schools that use some variation of block scheduling and whether to include or exclude them from the sample. In schools where an entire yearlong course is completed in one semester, a number of issues arise concerning teacher practice and timing of the SAT-9. In such a school, some students would have completed the entire geometry course before taking the SAT-9 in spring and others would only be halfway through the course. In such a school, teacher practice may be quite different than in schools with more traditional yearlong courses.

## Recommendations

As previously discussed, several issues are involved in a study that uses student achievement data from the SAT-9 to look at the relationship between student achievement in mathematics and teacher practice, instructional materials, and policy at the high school level. One possibility for dealing with these issues is to consider a study that focuses on entire mathematics departments instead of individual teachers. A mail survey similar to that used in the fourth- and eighth-grade study could be conducted using a revised teacher survey instrument. A subset of schools would be chosen for further data collection through interviews and classroom observations that would help form a more complete profile of mathematics departments. Student achievement scores in mathematics for ninth- through twelfth-grade students could then be analyzed in relation to the influence of the mathematics department as an entity.

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