



Course Enrollment Patterns

Current research has found algebra enrollment at the 8th grade level to be a strong indicator of high school mathematics enrollment and academic success in subsequent math courses (Lamicella-Dicarlo, 2004). Moreover, students who enroll in 8th grade algebra also appear to consistently enroll in subsequent math courses at the 9th and 10th grade levels. Consequently, students who complete algebra in the 8th grade attend college at greater rates than those who do not (Spielhagen, 2006). In a recent study for the State Board of Education, researchers found that of the students who completed Algebra 2 by their sophomore year, 95.6% met standard on the WASL (Baker, Gratama, Peterson, & Bachtler, 2008).

As part of the program evaluation for the Microsoft Math Partnership (MMP), The BERC Group gathered math enrollment data for 8th, 9th, and 10th grade students to better understand course enrollment patterns. Data collected at the 8th grade level was used to determine the extent to which students took algebra by the 8th grade. Data collected at the high school level was collected to analyze enrollment patterns in subsequent mathematics courses at the 9th and 10th grade levels.

Evaluators gathered and analyzed 8th grade course enrollment data from seven of the partnership districts to determine course enrollment patterns in the 2007 and 2008 school years. Seven partnership districts provided data for the 2007 school year and six partnership districts provided data for the 2008 school year.

Middle school mathematics courses were classified using two levels of rigor. “Below Algebra” refers to courses designated as remedial or algebra prerequisites, while “Algebra+” courses refers to courses considered algebra equivalent or more advanced placements (e.g. geometry).

Eighth grade math course enrollment data from 2007 and 2008 are shown in Figure 1. In both years, the majority of students were enrolled in courses that were classified as below algebra. However, the percentage of students enrolled in algebra or beyond increased from 2007 to 2008. These analyses will be conducted over

the duration of the initiative to determine if this pattern continues.

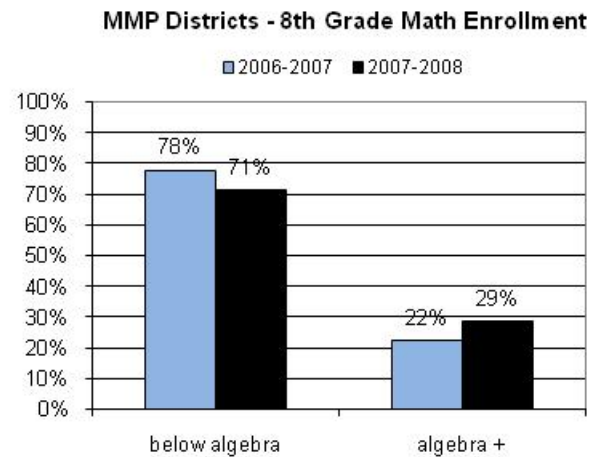


Figure 1. MMP Districts – 8th Grade Math Enrollment

Researchers also analyzed math enrollment patterns of students at high schools fed by partnership schools. Evaluators obtained transcripts for 9th and 10th grade students at twelve high schools for the 2006-2007 school year. These schools were selected according to the feeding patterns of the funded middle schools and junior high schools. It should be noted that not all graduates of the funded middle schools and junior high schools attend the selected high schools. Similarly, the student enrollment of the selected high schools is not exclusive to the funded middle schools and junior high schools.

The purpose of the high school transcript analysis was to determine enrollment patterns in math courses that follow algebra. Course enrollment patterns at the 9th grade level are shown in Figure 2, and enrollment patterns at the 10th grade level are shown in Figure 3.

Results indicate that 31% of 9th grade students are taking coursework beyond the algebra level. At the 10th grade level, 28% of students enrolled in courses beyond geometry. This finding is consistent with the middle school data showing 29% of the 8th grade students enrolled at the algebra level. This indicates that most 8th grade algebra students enroll in the subsequent math courses at the 9th and 10th grade level.

Analysis of high school enrollment patterns also show that 59% of the 9th grade students were enrolled in an algebra equivalent course, but 53% of the 10th grade students are taking a geometry level course. This drop indicates that some 9th grade students may retake algebra in their sophomore year.

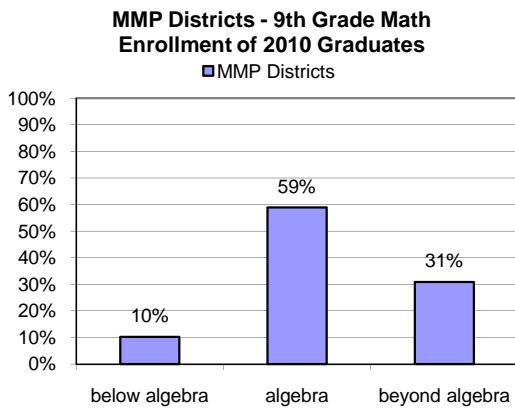


Figure 2. 9th Grade Math Enrollments of MMP Districts

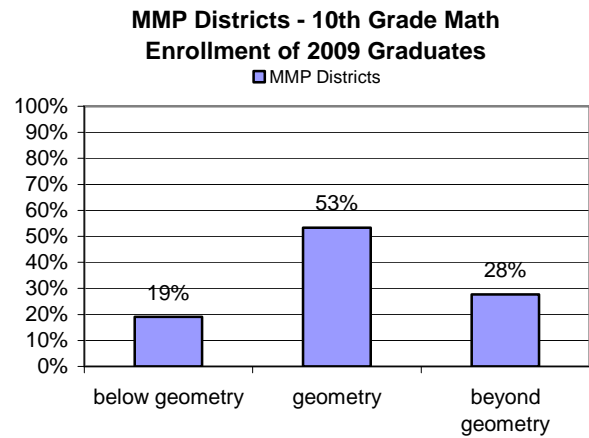


Figure 3. 10th Grade Math Enrollments of MMP Districts

Course enrollment patterns of MMP schools and corresponding high schools appears to be consistent with current research findings where students enrolled in 8th grade algebra are more likely to move onto subsequent courses than students enrolled in 9th grade algebra courses (Lamicella-Dicarolo, 2004).

These analyses will be conducted for the duration of the initiative to determine changes in course enrollment patterns over time. If enrollment patterns in 8th grade algebra and 9th grade geometry continue to be the same, then this evidence would support efforts to increase enrollment in higher level mathematics by encouraging more students to enroll in algebra courses in middle school.

Tracking this type of data is particularly important for districts and schools concerned with preparing students for college. Providing more 8th grade students with the opportunity to take algebra should lead to a greater percentage of graduates being college ready.

References:

Baker, D. B., Gratama, C. A., Peterson, K. M., & Bachtler, S. D. (2008). *Washington state board of education transcript study*. Bothell, WA: The BERC Group, Inc.

Lamicella-Dicarolo, M. (2004). *The effects of self-concept, perception of parents' expectancies, and locus of control on mathematics course enrollment* [Dissertation]. Retrieved January 7, 2009, from PsycINFO database.

Spielhagen, F. (2006, January 1). Closing the Achievement Gap in Math: The Long-Term Effects of Eighth-Grade Algebra. *Journal of Advanced Academics, 18*(1), 34-59. (ERIC Document Reproduction Service No. EJ753970)