Curriculum Leadership Institute E-Hint

Traditional Math Courses vs Integrated Math Courses: How to Decide?

The Common Core State Standards for Math (CCSS) are arranged by specific grade levels in kindergarten through eighth grade. Although the standards are divided into specific strands at the high school level (geometry, algebra, etc.), they are listed as appropriate for ninth through twelfth grade students without designation as to which standards are to be included for each grade. This structure allows school districts to make individual decisions about how to organize their high school math courses and what standards to include at different grade levels.

Appendix A http://www.corestandards.org/assets/CCSSI_Mathematics_Appendix_A.pdf of the CCSS document provides guidance for which standards should be included in the courses within a traditional math program typically consisting of two algebra courses, a geometry course, and a fourth course. It also provides guidance for creating and organizing integrated Math 1, Math 2, Math 3, and a fourth course. Most high schools in the United States follow the traditional path of courses while the integrated path is common in schools outside the United States.

The availability of the integrated math option has caused some high schools to re-evaluate which path is more appropriate for their students. It is not completely clear whether the assessment organizations, the Partnership for Assessment of College and Career Readiness (PARCC) and the Smarter Balanced Assessment Consortium (SBAC), will provide opportunities for high schools to choose assessments aligned to specific standards based on their choice of program. Therefore, that consideration must factor into the decision of which pathway to pursue. Aside from high-stakes assessment issues, there are two perspectives that need consideration.

1. If the district currently employs the traditional path, changing to the integrated program would leave students already completing traditional courses lacking in skills expected in the subsequent courses in an integrated program. For instance, a student who has completed Algebra 1 would not have the geometry and statistics/probability skills requisite to complete a Math 2 course.

2. If the district currently employs the integrated path, changing to the traditional program would cause students to repeat skills already taught in a traditional course in the subsequent Math 2 course and other skills would be lacking. For instance, a student who has completed Math 1 would likely have an overlap of concepts taught in a traditional Geometry course in a transition year.

The district's capacity to reallocate resources impacts their ability to make any transition smoothly. Regardless of the pathway the district currently follows, the transition would require that implementation of the alternative path be a "phase in" process. Consider the following scenario for a district changing from a traditional path to the integrated path.

- In year one, the Math 1 course would be offered to incoming students but Math 2 and Math 3 would not be offered in the first year. Beyond the entry level
- In year two, Math 1 and 2 could be offered but Algebra 2 and a traditional fourth course would still need to be continued.
- In year three, a district could offer Math 1, 2, and 3 but the fourth course would need to remain as the traditional course.
- Finally, in year four, a district could make the complete transition with confidence that all students would find a place in the pathway for which they are prepared.

This "phase in" process can result in a drain on resources in order to maintain both pathways simultaneously. The transition can be particularly difficult in smaller districts with fewer human and financial resources available.

A second consideration is that in some states teachers must be licensed in the strand of math they will be teaching; so, the licensure of a teacher for algebra courses does not necessarily ensure a licensure for geometry or advanced courses. If that is the case, then meeting the highly qualified standards for integrated math classes can be difficult and require, at the very least, a shuffle of teachers during the transition years. If the licensure is an issue, some high schools are not equipped to make the transition due to limitations on the courses a teacher is able to teach.

In addition to the previous points, what will happen to students that were not successful in a course that is being phased out the next year? Due to the transition process, those students are left to pursue a path for which they may not be prepared. Since these students are often those most at risk, forcing them to take courses for which they are not prepared may ensure their continued failure.

In making the decision of which pathway to pursue, leaders must evaluate both the district's capacity for changing the allocation of teacher resources and the enrollment issues that may arise for current students. Regardless of the path chosen, the CCSS Appendix A support for the allocation of standards to courses is a valuable tool for the team of stakeholders assigned to make the decisions about alignment.