



STEM Summit V: *Implementing the Plan*

Preparing Massachusetts students for careers in
science, technology, engineering and mathematics

The 2008 Brown Center Report on American Education *Elements of a Realistic Algebra Policy...Report Excerpt*

1. Get the goal right. Focus on learning, not completing a course... No evidence exists that it matters whether algebra is learned in eighth grade or later, and some students may need more than a year to learn the subject.

2. Teach and assess prerequisite skills.

Proficiency on the...fundamental mathematical topics needs to be acquired before entry to algebra...Indeed, elementary mathematics is essential and failure to learn it has long term consequences.

3. Early intervention. Preparing students for algebra is the culmination of many, many years of teaching and learning and the product of hard work by students, teachers, and families. Mandating algebra in eighth grade is the equivalent of mandating, by policy, that all buildings immediately erect a fiftieth floor—regardless of their current height. Use diagnostic assessments of whole number and fraction arithmetic in the elementary grades to identify students who are struggling at math. Build student accountability into the system by requiring summer school for students who need more time to learn the building blocks of mathematics.

4. Collect data, conduct research. Many advocates of algebra for all eighth graders express the belief that lofty public policy goals can be attained through sheer will power, a “mandate it and it will be accomplished” ideal...Algebra for eighth graders is an ideal policy for randomized experiments. The mandate could be introduced in some schools and districts but not others and student outcomes compared.

In Conclusion: One hundred twenty thousand students are misplaced in their eighth-grade math classes. They have not been prepared to learn the mathematics that they are expected to learn. This unfortunate situation arose from good intentions and the worthy objective of raising expectations for all American students. Two groups of students pay a price. The misplaced eighth graders waste a year of mathematics, lost in a curriculum of advanced math when they have not yet learned elementary arithmetic.... Their classmates also lose—students who are good at math and ready for algebra. These well-prepared but ill-served students also tend to be black and Hispanic and to come from low socioeconomic backgrounds. Teachers report that classes of students with widely diverse mathematics preparation impede effective teaching ...and that they wish that elementary schools gave greater emphasis to basic skills and concepts in math...

This study is not a call to lower expectations. Nor is it a call for cynicism...Universal eighth grade algebra is creating more problems than it solves, with 120,000 students not learning the mathematics that they need to know and hundreds of thousands of their classmates paying an educational price along with them.

For the full report go to:

http://www.brookings.edu/~media/Files/rc/reports/2008/0922_education_loveless/0922_education_loveless.pdf