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FULL DETAILS AND TRANSCRIPT

State Perspective on Algebra

Connecticut State Department of Education • November 2008

Topic: National Math Panel: Major Topics of School Algebra

Practice: Multiple Paths

Highlights

- Implications of National Math Panel Report for state actions
- Expectations that all students complete Algebra I
- Statewide plan for secondary school mathematics course sequence
- Gaps in student preparation
- Professional development needs
- Students rising to the challenge

Full Transcript

Hi, my name is Marlene Lovanio, and I am the director of STEM [Science, Technology, Engineering, and Mathematics] and Literacy Programs for the Connecticut State Department of Education, also responsible for Secondary Mathematics Programming in our Bureau of Curriculum and Instruction.

There are many implications of the National Math Panel report for our work. In Connecticut, there are different types of actions that we are considering at the state level related to the National Math Panel report. We are expecting that all students take at least Algebra I, but we have many students already who are taking courses through Algebra II, and we anticipate that those numbers will only increase. Right now, we have about 75 percent of our students that complete coursework through Algebra II. We have a secondary school reform plan that we are putting forward, and our secondary school reform plan includes specific courses in the STEM area. In Mathematics, that includes Algebra, Geometry, Algebra II or Probability and Statistics and an advanced mathematics course for all Connecticut students, resulting in four credits of Mathematics at the high school level. And the Algebra course, students can get credit for if they do take it in middle school. In Connecticut, we have students taking Algebra, in some cases, as early as sixth grade but seventh grade or, more specifically, there are increased numbers of students taking it at the eighth grade level.

With this new secondary school reform plan, we actually have a request for proposals to bring together a group of Connecticut educators to devise a new model curriculum in Algebra I and, along with that, to include formative assessments, summative assessments, and items for a proposed statewide final exam in Algebra I. We are setting the standards for Algebra across the state, such that all our towns are providing at least the minimum skills needed for students to succeed in the next level, to succeed on the SAT—which most of our students take, and to succeed in preparing for college or through other postsecondary options such as two-year schools, technical schools, or moving straight into the military or into the workforce.

There are other aspects that we are working on in our state, and one other aspect is certification. We are revising our certification regulations and bringing them to the legislature in 2009, and one of the exciting new certifications that we have in mathematics, and also in science, is a Math Specialist Certification that we will be proposing next year. This certification is a specialist certification that's a master's program that gives teachers further K-12 content knowledge around mathematics as well as math programming information, curriculum, and a broader scope of what students need to be able to understand in their K-12 education, and especially in preparation for higher-level mathematics including algebra.

Our students are generally prepared for algebra, but we definitely have some gaps. There are many teachers that still are seeing students come to them in the Algebra course without a solid foundation of number sense, without a solid foundation of understanding fractions, and without a solid foundation of operations. We at the state are working with teachers on professional development around what it means to teach these concepts for long-lasting understanding so that it's not about just recall of facts or recalls of some specific

ways to do a problem, specific processes, but it's about understanding, it's about making connections, it's about building on prior experiences and knowledge, and it's about making sure that students are connecting it to applications and other situations that they know so that they are remembering and understanding the concepts that we are teaching. So, we are seeing some gaps with teacher content knowledge across the state. And one of my roles is to work with supervisors in helping them determine the professional development that's needed.

We are moving towards a system that includes teacher competencies around addressing all learners so that our teachers are going to be more competent in dealing with Special Education students, English Language Learners in our classroom, students who have—may be first generation algebra takers. What we are noticing is, as the expectations are increased, the students are rising to meet the challenges, and that's a message that is so important for teachers in that our students can do the mathematics. It's about the approach that we take.