

Another Advance In

STEM Education



Iowa State University informing decision-makers about research in **Science–Technology–Engineering–Mathematics Education**

Project AAIMS

Building better assessments to advance algebra skills

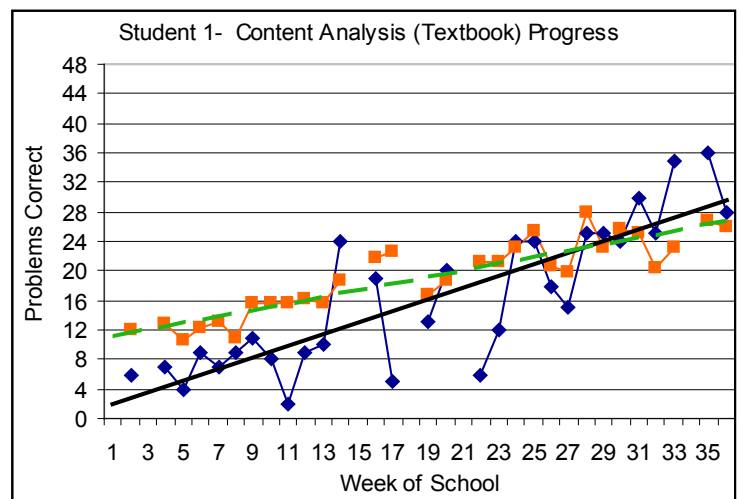
“Algebra is often defined as a *gatekeeper*, controlling access to higher education and advanced careers,” said Anne Foegen, an associate professor in curriculum and instruction at Iowa State University. In other words, to succeed as adults in the 21st century, young people must first succeed in algebra. It follows that educators and policymakers increasingly realize it is critical to help all students become proficient in algebra and ensure they complete more rigorous high school mathematics courses.

Foegen’s research team is developing tests that teachers can use to accurately monitor each student’s progress. By tracking each student’s overall growth in algebra, the measures help teachers identify students who are struggling and provide remedial help to keep each student on track. Students take the timed tests, which have been developed in four alternative formats for content ranging from PreAlgebra to Algebra 1.

The researchers began working with three Iowa school districts in 2004 to study connections between the way algebra is taught in different classrooms and the way students’ abilities are assessed. Then they developed and validated appropriate assessment tools.

Foegen plans to test the Algebra Assessment and Instruction: Meeting Standards (AAIMS) measures in more diverse populations in several states. She will “provide teachers with more efficient means for

scoring the assessments, deriving diagnostic data about students’ specific strengths and weaknesses, and managing data for larger numbers of students,” she said. Under her timeframe, the measures could be readily available for teachers’ use in five to ten years.



The graph above was generated automatically after a teacher entered individuals’ AAIMS assessment scores into a computer. The graph compares the scores for an individual student, John (in blue). Comparing the trend line for John’s assessments (in black) with the trend line of high school averages (in green) reveals that John’s understanding of the material was below average in the beginning of the study and improved significantly to become higher than average by the end of the year.

For more information

Visit the Project AAIMS web site at www.ci.hs.iastate.edu/aiims or contact Anne Foegen, phone 515 294-8373, email afoegen@iastate.edu.