



Response for *Math Innovations* Grades 6-8

The Content of *Math Innovations*

The Ed Reports' reviewers highlight important features of *Math Innovations* that educators should consider when selecting and using a curriculum. From the Ed Reports review of *Math Innovations*, "An exceptional aspect of the materials is the integrated nature of the lessons. No topic is taught in isolation. Major work is incorporated in to supporting topics and many connections are made between domains and clusters. The materials go to great lengths to develop a conceptual understanding of math topics... The problems in the On Your Own section (*problem sets*) provide students with the opportunities to engage deeply with the mathematics. The problem sets begin with writing about mathematics. The problem structures focus on open-ended, thought-provoking questions in which a student frequently has to perform an investigation and justify their reasoning."

The author team and Kendall Hunt dispute the percentages used by the reviewers in determining the amount of time spent on the Major Work of each course. More importantly, however, we believe, as do the writers of the CCSS-M Standards (CCSS-M, p. 5), that standards should not dictate curriculum or teaching methods. Instead, standards should be the guide used to develop the curriculum. In this process, the CCSS are the floor, rather than the ceiling, from which to build a curriculum. And so, in addition to including the CCSS content that the Ed Reports' reviewers deem as essential, the authors of *Math Innovations* drew from the extensive body of research and knowledge in mathematics teaching and learning as well as our many years of experience teaching and working with students and teachers. This provided a framework for the development of the content within and across grade levels.

We also believe that it is up to each school community to determine how they plan to implement CCSS. Many schools have a significant population of students taking Algebra 1 in the eighth grade and are looking for materials to support acceleration. Other schools are looking for materials to bridge the gap between their current student achievement levels and the standard set by CCSS. *Math Innovations* is designed to provide that flexibility. The Ed Reports protocol does not support this flexibility.

The goal of *Math Innovations* is to assist students in becoming proficient mathematical learners who make sense of, apply, appreciate and enjoy mathematics. And it is a balanced program. It develops students' understanding of important mathematical concepts and relationships as well as students' procedural fluency with skills and operations. Not only does each grade level's content include the CCSS outlined for that grade level, but also we go beyond to provide students with investigations that motivate and challenge them to think deeply about concepts.

Through our research with students using the program, we have evidence that *Math Innovations* with its increased challenge and content is successful. As the writers of the CCSS-M point out, “For over a decade, research studies of mathematics education in high-performing countries have pointed to the conclusion that the mathematics curriculum in the United States must become substantially more focused and coherent in order to improve mathematics achievement in this country” (p.3). Based on our research, we found students in Grades 6 and 7 studying *Math Innovations* were much more successful than students in the U.S. and internationally on questions from the eighth grade *Trends in International Mathematics and Science Study* (TIMSS). The percentages for Grade 6 on the NAEP show students performed as well as the US sample of eighth graders and significantly better than the comparison group. The seventh grade results show *Math Innovations* students performed much better than the eighth grade US sample and significantly better than the comparison group. These questions were one- to two-grade levels above for students using *Math Innovations* as compared to U.S. and international students who were in eighth grade when taking the assessment. Results are shown in the table below.

Table 1 – Grade 6 Results on the TIMSS and NAEP Items		
Grade 6	Percent Correct TIMSS Item Proportional Reasoning	Percent Correct NAEP Item Algebraic Thinking
<i>Math Innovations</i> Group	63%	46%
Comparison Group	31%	21%
United States Students	50%	47%
International Students	41%	

Table 2 – Grade 7 Results on the TIMSS and NAEP Questions		
Grade 7	Percent Correct TIMSS Item Proportional Reasoning	Percent Correct NAEP Item Probability
<i>Math Innovations</i> Group	73%	75%
Comparison Group	49%	63%
United States Students	48%	52%
International Students	47%	

Mathematical Practices – The Heart and Soul of *Math Innovations*

We believe the partial evaluation of our program does not provide evidence of the equally important piece of a mathematics program, the way in which students come to understand the content. We believe **how** students learn is as important as **what** they are learning. The

instructional strategies, or to use the writers of the CCSS-M term, “teaching methods ” include instilling mathematical habits of mind outlined in the Common Core Standards for Mathematical Practice. The CCSS writers state: “Designers of curricula, assessments, and professional development should all attend to the need to connect the mathematical practices to mathematical content in mathematics instruction” (p.8). At the heart of the *Math Innovations* program is the recognition that all students have the ability think like a mathematician and investigate like a mathematician in order to develop the habits of mind that mathematicians use on a regular basis. Students engage in mathematical activities that emphasize inquiry and exploration. They generate questions, make and justify conjectures, debate ideas, and describe and predict patterns both orally and in writing. These are the Common Core Standards for Mathematical Practice and are the heart and soul of every lesson across the content for all grade levels of *Math Innovations*. Because of the evaluation methodology of Ed Reports, a complete and fair evaluation of our entire program including our focus on how material was taught and learned was not conducted and is not available to educators.