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Key Messages of the Panel Report

Larry Faulkner, Ph.D. • November 2008

Topic: National Math Panel: Major Topics of School Algebra

Highlights

- Overview of the Panel and how it differs from similar groups chartered to look at mathematics education
- Key messages and recommendations
- How the research findings relate to educators
- Explanation of why it's important to teach fewer topics focused on the critical foundations
- The need for simultaneously teaching conceptual understanding, computational fluency, and problem-solving skills
- Importance of teachers laying the foundation for students to succeed in algebra
- Key messages for teachers in the areas of content, learning processes, and instructional practices
- The role of effort in learning mathematics
- How teachers can use the Panel's findings to inform instructional practice

About the Interviewee

Larry R. Faulkner, Chair, National Mathematics Advisory Panel and Member,

Conceptual Knowledge and Skills Task Group. He is also President of Houston Endowment, a private philanthropy established by Jesse H. and Mary Gibbs Jones and President Emeritus of The University of Texas at Austin. Dr. Faulkner served on the chemistry faculties of Harvard University, the University of Illinois, and the University of Texas. At Illinois, he was also department head, dean, and provost. From 1998 into 2006, he served the University of Texas as its 27th president. He is a member of the American Academy of Arts and Sciences and recently chaired the National Mathematics Advisory Panel. He now serves on the boards of Exxon Mobil, Guaranty Financial Group, and Temple-Inland, and was previously on the boards of Sandia National Laboratories and Internet2.

Full Transcript

I'm Larry Faulkner, President of Houston Endowment and Chair of the National Mathematics Advisory Panel. The Panel was charged by the President of the United States in an executive order. We were created by the President to, essentially, look into the best available scientific evidence relating to the preparation of students to enter into and to succeed in algebra.

This Panel differs from other committees or groups that have been chartered to look at math education historically in that it has had a very strong focus on what the scientifically generalizable evidence can tell us. This Panel has encompassed the full scope of educational philosophies. We have members who cover the full spectrum, and people approach the issue of educating children in mathematics—instinctively anyway—from radically different directions. But they have converged in this effort on an agreement that what we would do is look at what the real and strong and defensible scientific studies tell us about mathematics education.

As teachers approach the Math Panel's report, I think it's important to recognize that there aren't details here about exactly how to carry out a given instructional practice, but there's advice on—general advice—on how instructional practices can succeed, better ones for better situations. And there is quite a bit here about how children learn mathematics that can inform the way teachers develop their own pattern of instruction and approach to students. Our hope is that the findings that we have communicated will be used by schools and school leaders and teachers to improve the education of young people so that they can succeed in Algebra.

Algebra in turn is, I think, an important goal for the nation to focus on. Our children aren't succeeding as well as they need to by worldwide standards, and it turns out that algebra is in a central position in the curriculum. It has a lot to do with how far children can take their education overall, not only in secondary school but beyond secondary school.

A message that we would really want to convey is that teachers at all levels are laying the foundation for children to succeed in algebra. Children are assembling knowledge from early ages to later ages that culminates in success or lack of success in another foundation experience, Algebra, that has a great bearing

on a child's future life.

Still another message, I think, that we want to be sure that teachers understand has to do with importance of effort. There is a cultural tendency in America for us to give up easily on mathematics, and the Panel has the sense that this cultural tendency is rooted in a view in the nation that mathematics is really a matter of talent, you either have it or you don't. And that's actually not supported by research. Research shows that if students believe that working at their mathematics will make them smarter in mathematics, that they actually do achieve and eventually reach higher levels of proficiency.

As the Panel looked into matters relating to teachers, the most important message that has come out of our work is that teachers are enormously important. Teachers, as they approach children, have greater effectiveness if they have a greater command of the mathematical material that they are expected to teach. And so we do put a high emphasis in this report on approaches that can increase or strengthen teacher knowledge of the mathematical subject material. As teachers have opportunities in service development or in other venues, we've urged them to take advantage of opportunities that can actually strengthen their content knowledge.