A Simple and Duplicatable Math Solution for the United States

by Steven Yang, CEO and Founder, MathScore.com

I believe that the National Math Panel should emphasize a solution that can ***easily be duplicated*** across every school within the United States, regardless of teacher talent, access to computer technology, and budget. Although proposals to hire staff, train teachers, engage students, and integrate technology all have merit, none of those solutions can effectively be duplicated in every school in the United States.

According to the findings in TIMSS, Asian countries, such as Singapore, China, and Japan greatly outperform the United States. They consistently outperform us without having made any significant adjustments to the way they teach math for quite some time. What they do differently is so basic that it surprises me to see such confusion in the United States.

In Asian countries, students are forced to focus on math facts by regularly doing timed tests. By the end of 4th grade, nearly 100% of all students in these countries have complete mastery over their multiplication and addition math facts. Kindergarteners are typically exposed to addition, and by 2nd grade, addition math facts have already become second nature. By the end of 4th grade, without question, these kids know their multiplication facts. Furthermore, these students typically demonstrate superior critical thinking skills. This is because students who know their basics have a proper foundation on which to build critical thinking skills.

According to student usage at MathScore.com, less than 1 in 5 of our 5th grade users start the school year with mastery over multiplication math facts! Unfortunately, we've consistently seen this inadequacy in thousands of students throughout California, implying that less than 20% of all students in California (and likely the rest of our nation) master their multiplication math facts by the end of 4th grade. Unfortunately, it is possible to score "proficient" on most states' 4th grade exams without a solid foundation in basic math facts, so the average teacher is misled into thinking students are better at math than they really are. It's our nation's Algebra I teachers who get hit the hardest. In Algebra I, if you don't have your math facts memorized, you are almost guaranteed to fail. This explains why seemingly "proficient" students often fail in Algebra I.

Merely changing each state's curriculum to require mastery in multiplication and addition facts **will not work**. It is already required in California, but because we have too many state standards, most elementary school teachers simply ignore math facts and cover the rest of the standards. If we want a nation of students who have great critical thinking skills and Algebra I competence, we need a measurable, proactive solution to help our students learn their basic skills.

As the solution, I believe the National Math Panel should suggest a mandate on regular timed math tests starting with first graders. There should be a standard on the number of problems, difficulty of the problems, and the time allotted at each grade level. This way, regardless of school resources, every teacher in the country can unambiguously follow through. I also believe knowledge of math facts should be tested on state tests. **This solution is simple, measurable, and can be implemented easily in every school in the United States.** It even supports the NCTM Focal Points.

For schools with computers, I believe technology can help. MathScore.com provides customizable, printable math facts worksheet generators at no charge. I believe these generators can make the process of producing appropriate math facts worksheets as painless and efficient as possible. We can also provide a patent-pending, adaptive learning system for schools that have Internet access. We took a 5th grade classroom from 34% proficient as 4th graders to 53% proficient as 5th graders in only one year of use, one hour per week. I believe the proven

improvement in test scores seen by users of our system validates the approach of starting with math basics before focusing on critical thinking skills.

A lot of people think there isn't a "magic bullet" in U.S. math education. If less than 20% of our 5th graders know their math facts, but nearly 100% of Singapore's 4th graders (and likely 3rd graders) know theirs, it seems pretty clear to me that fixing this discrepancy could very well have long term benefits that qualify as the very magic bullet that most educators dismiss as impossible.

If there is anything I can do to help, such as provide statistical analysis or suggest a strategy for implementing math facts competency in our schools, please feel free to let me know.

Sincerely,
Steven Yang
CEO and Founder, MathScore.com
steven@mathscore.com
(888) 810-MATH