

National Math Panel Report:

PLATO Learning's Elementary Classroom Math Solution | Update: March 20, 2008

The National Math Advisory Panel released its final report on March 13, 2008. The full report, along with the Fact Sheet summary recommendations, can be found at: <http://www.ed.gov/mathpanel>.

PLATO Learning's Elementary Classroom Math Solution includes *Straight Curve® Mathematics* for whole class supplementary learning, supported by *PLATO® Math Expeditions* and *PLATO® Foundational Math* for individualized, differentiated learning. A powerful learning management system and professional development complete this solution. This document briefly explains how this full-spectrum classroom solution addresses the Fact Sheet recommendations.

Core Principles of Math Instruction

K–12 or Elementary-Focused Recommendations	PLATO Learning's Elementary Classroom Math Solution
The areas to be studied in mathematics from pre-kindergarten through eighth grade should be streamlined and a well-defined set of the most important topics should be emphasized in the early grades. Any approach that revisits topics year after year without bringing them to closure should be avoided.	This is perhaps the most emphatic point from the National Council of Teachers of Mathematics (NCTM) Math Focal Points. <i>Straight Curve Mathematics</i> focuses specifically and deeply on building block concepts of mathematics, especially those that traditionally have been the most difficult to teach and learn.
Proficiency with whole numbers, fractions, and certain aspects of geometry and measurement are the foundations for algebra. Of these, knowledge of fractions is the most important foundational skill not developed among American students.	<i>Straight Curve Mathematics</i> applies special emphasis on proficiency in whole numbers, fractions, and critical geometry and measurement applications. Furthermore, <i>PLATO Math Expeditions</i> and <i>PLATO Foundational Math</i> provide significant differentiated instruction in these areas, for either accelerated learning or Tier 2 targeted intervention.
Conceptual understanding, computational and procedural fluency, and problem solving skills are equally important and mutually reinforce each other. Debates regarding the relative importance of each of these components of mathematics are misguided.	The NCTM Math Focal Points also make this clear: the “math wars” should end. <i>Straight Curve Mathematics</i> has been specifically designed to develop concepts and problem-solving skills through both constructivist learning and direct teaching methods. Game-based practice increases student engagement and fluency.
Students should develop immediate recall of arithmetic facts to free the “working memory” for solving more complex problems.	The PLATO Learning solution provides highly-engaging activities to keep students working and developing fluency, from facts to applications.
The benchmarks set forth by the Panel should help to guide classroom curricula, mathematics instruction, textbook development, and state assessments.	PLATO Learning's products are designed to be flexible to fit state standards. However, our math solution clearly reflects the order and depth of conceptual coverage outlined in the benchmarks.

Secondary Focused Recommendations:

- More students should be prepared for and offered an authentic algebra course at Grade 8.
- Algebra should be consistently understood in terms of the “Major Topics of School Algebra,” as defined by the National Math Panel.
- The Major Topics of School Algebra include symbols and expressions; linear equations; quadratic equations; functions; algebra of polynomials; and combinatorics and finite probability.

Student Effort Is Important

K–12 or Elementary-Focused Recommendations	PLATO Learning’s Elementary Classroom Math Solution
<p>Much of the public’s “resignation” about mathematics education is based on the erroneous idea that success comes from inherent talent or ability in mathematics not effort. A focus on the importance of effort in mathematics learning will improve outcomes. If children believe that their efforts to learn make them “smarter”, they show greater persistence in mathematics learning.</p>	<p>PLATO Learning’s Elementary Classroom Math Solution is specifically designed to help teachers foster an engaged, supportive, and successful math community. Most importantly, we focus on on-going success and progress for all students: at grade level, below, or above.</p>

Importance of Knowledgeable Teachers

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<p>Teachers’ mathematical knowledge is important for students’ achievement. The preparation of elementary and middle school teachers in mathematics should be strengthened. Teachers cannot be expected to teach what they do not know.</p>	<p>A workshop, course, or even an intensive summer seminar can’t develop expertise as effectively and deeply as daily guided practice. Straight Curve Mathematics was intentionally designed to partner with teachers in their classrooms. This ongoing practice helps both students and teachers grow in their mathematical expertise and confidence—every day.</p> <p>PLATO Learning’s professional development program sets the stage for this process. Introductory workshops and coaching and mentoring sessions focus intently on increasing teachers’ ability to lead a challenging, yet nurturing math community.</p>
<p>The use of teachers who have specialized in elementary mathematics teaching could be an alternative to increasing all elementary teachers’ mathematics content knowledge by focusing the need for expertise on fewer teachers.</p>	<p>PLATO Learning supports the use of math specialists in elementary, however, our focus is to help every elementary teacher become more comfortable and proficient in math and math pedagogy.</p>

Effective Instruction Matters

K–12 or Elementary-Focused Recommendations	PLATO Learning’s Elementary Classroom Math Solution
Teachers’ regular use of formative assessments can improve student learning in mathematics.	Readiness assessments, pretests, and lesson-by-lesson quizzes help teachers assess holes in student understanding before, during, and after classroom instruction activities.
Instructional practice should be informed by high-quality research, when available, and by the best professional judgment and experience of accomplished classroom teachers.	Straight Curve Mathematics’ instructional design is based on the latest research findings regarding critical elements of success in math. See our research white paper for more information.
The belief that children of particular ages cannot learn certain content because they are “too young” or “not ready” has consistently been shown to be false.	This point is also emphasized in the NCTM Math Focal Points. PLATO Learning’s scope and sequence is informed by the Focal Points structure.
Explicit instruction for students who struggle with math is effective in increasing student learning. Teachers should understand how to provide clear models for solving a problem type using an array of examples, offer opportunities for extensive practice, encourage students to “think aloud,” and give specific feedback.	<p>Straight Curve Mathematics’ mini-lessons include explicit whole-group interactive instruction with multiple examples.</p> <p>Straight Curve Mathematics builds in structured “think aloud” opportunities in the mini-lesson, investigation, and workshop.</p> <p>Straight Curve Mathematics games—supported by its individualized, differentiated instruction products—provides students with extensive and varied practice.</p>
Mathematically gifted students should be allowed to accelerate their learning.	Differentiated learning components enable teachers to easily and effectively accelerate learning for gifted students.
Publishers should produce shorter, more focused and mathematically accurate mathematics textbooks. The excessive length of some U.S. mathematics textbooks is not necessary for high achievement.	Straight Curve Mathematics focuses specifically and deeply on building block concepts of mathematics, especially those that traditionally have been the most difficult to teach and learn.

Effective Assessment

The National Assessment of Educational Progress (NAEP) and state assessments in mathematics should be improved in quality and should emphasize the most critical knowledge and skills leading to algebra.

Importance of Research

The nation must continue to build the capacity for more rigorous research in mathematics education to inform policy and practice more effectively.

For more information about PLATO Learning’s Elementary Classroom Mathematics or to download our white paper on the research base of Straight Curve Mathematics, please visit www.plato.com/scmath.



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PLATO Learning
 10801 Nesbitt Avenue South
 Bloomington, Minnesota 55437
www.plato.com