Mathematics Achievement in Washington – July 28, 2006

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Why did only approximately one-half of the 10th grade students meet the math standards?

How does our success in reading inform our limited success in math?

Component	Reading	Math	Recommended Actions
Curriculum: **Scope of Targets**	There are 13 reading targets that are assessed for reading comprehension. The scope of reading is focused and manageable.	In math, there are five content strands with numerous targets and four process strands. There is too much to cover, specifically in the content strands.	Narrow the scope of the targets in math and provide a clear organizational structure that relates content to process.
Research Base in Best Practices	Much has been published on best practices: Mosaic of Thought Strategies that Work I Read It But I Don't Get It Non-Fiction Matters We have focused on reading for almost a decade now.	There is less focus on published materials to assist teachers in developing a conceptual understanding of what math is and how to teach it, especially vocabulary development and problem solving. The Teaching Gap defines problems in math instruction but doesn't provide concrete methodology for addressing these problems.	Organize and publish a resource library that supports best practices in math instruction. Provide professional development in best practices for teaching mathematics, especially concept development versus rote learning.
Differentiating Instruction to meet the diverse needs of learners	We understand how to differentiate in reading using practices like Guided Reading and Reader's Workshop.	There is little or no differentiation within a class to meet specific needs. Rather, we rely on tracking and a one size fits all approach with curriculum.	Professional development, including resources, in how to differentiate learning within the math classroom.

Component	Reading	Math	Recommended Actions
Use of Resources	Multiple resources are used including trade books, class novels, guided reading materials, student choice. Multiple resources allow the teacher flexibility in meeting diverse needs. The texts are resources not the curriculum.	Many teachers rely on a single adopted math curriculum. Covering the text becomes the focus, not meeting individual needs. There is a reluctance to supplement the text book given perceived time constraints by the teachers.	Provide quality resources to supplement adopted curriculum, especially in the process strands of math. Core math resources, for the most part, emphasize the content strands. Show teachers how to integrate supplemental materials with the adopted text. The GLE's should drive the curriculum, not the adopted text.
Instructional Support at the Elementary Level	Many districts have elementary reading specialists and/or reading coordinators. Title I and LAP monies are often used to support early reading instruction.	Districts do not typically allocate resources to support math specialist positions. Significantly less effort has been devoted to supporting math interventions and math instruction.	Provide funding for district or building math support with roles similar to the Math Helping Core teachers.
Classroom Based Assessments	Reading assessments are typically aligned with the comprehension targets. The item specifications in reading are manageable in scope and easy to use for creating classroom based assessments.	Classroom based assessments tend to be driven by the math text and not the math GLE's. The math test specifications are too broad in scope for ease of use by classroom teachers.	Make available a resource bank of classroom based assessment items aligned with the math GLE's in a format that allows districts or schools to construct their own core assessments.
Integrated Learning	Reading is a tool practiced throughout the instructional day and in the home. Students have multiple opportunities to read for the purpose of making meaning.	Content area teachers make very limited use of math applications. Math is not practiced in the same way that reading is nor has an effort been made to integrate math across the curriculum.	Provide inservice on how to integrate the math GLE's with other content areas. These resources are readily available for reading but not for math.

Other Recommendations:

1) Provide funding and technical support for lab classrooms in math where:

   - The instruction develops deep conceptual understanding for students.
   - The curriculum is fully aligned with the GLE's.
   - Assessment is frequent, is used to inform instruction, and provides information for student interventions.
   - Teachers who observe in the lab classrooms experience professional development that includes the following components:

     * Learn
     * Observe
     * Practice
     * Feedback
     * Reflection
     * Evaluation

2) Develop high quality professional development materials for teaching math content and process including math vocabulary and rich problem solving.

3) Broaden the scope of the Math Helping Corp to provide at least one math specialist per school district.

4) Postpone or modify meeting the math standard as a graduation requirement. Students have not had sufficient opportunity to learn the math GLE's and districts are ill prepared to support their teaching staff, because of funding constraints and insufficient expertise in math pedagogy.