Justification for Balanced Mathematics Resources at Elementary

Madison Metropolitan School District mathematics standards define the mathematics that children should know and be able to do. These standards were drafted to address the need for grade-level proficiencies to be successful in future math related experiences as well as on the Wisconsin Knowledge and Concepts Exam. As such, the standards provide a framework for teaching math in the elementary grades.

The Teaching and Learning Math Department has worked closely with Madison teachers over the past five years to develop two instructional guides entitled *Learning Mathematics in the Primary Grades* and *Learning Mathematics in the Intermediate Grades (LMIG)*. These guides provide the core instructional plan for teaching a balanced math curriculum to all children in MMSD.

Notably, the guides incorporate years of research from around the world about how children learn mathematics (see Appendix in *LMIG*). The *Learning Mathematics* guides offer information about process and content standards, assessment of student learning, communication to parents, ways to organize classrooms, and activities to help children develop mathematical proficiency. Nearly all teachers in MMSD have received these guides along with some professional development to begin implementing the ideas within them.

However, ongoing professional development is critical. The department recommends:

- math instructional resource teachers in every elementary school and continued professional development for these IRTs
- ongoing professional development to help teachers delve deeper into the math content knowledge they need for teaching
- special attention to strategies aimed at closing the achievement gap
- continued development of intervention strategies for students who fall outside the expected learning trajectory (considerably below or above proficiency)
- continuation of online classes for teachers about to provide additional support for a balanced math framework

Teachers also need published instructional materials (those that school districts purchase from education publishers) to support their balanced math curriculum.

In 2000, a math leadership committee recommended published materials to support the MMSD Framework and Strategic Plan. In 2005, a committee of district math resource and classroom teachers analyzed the use of those materials. Evidence suggested that some materials didn’t function as expected and the committee identified a new set of elementary core curricular resources. The recommendations in the recent Math Task Force report affirmed the need for K-5 resources.
The following criteria influence our ongoing evaluation of nationally published education materials. The materials must:

- Comply with the instructional framework provided within *Learning Mathematics in the Primary Grades* and *Learning Mathematics in the Intermediate Grades*
- Allow for flexible use of the materials so that math instruction meets the diversity of our learners and classroom structures
- Support the grade-level learning trajectories implicit in the math standards

Strong educational systems support and encourage diversity. No one set of student or teacher materials supports the diversity in our district. The Teaching and Learning Department, in partnership with building based staff, is therefore recommending a set of core resources to support student learning, instead of a “single textbook.”


1. The balanced mathematics curricular resources (published instructional materials) should align with the district math process and content standards and the new instructional framework.
   a. The 2005 Curriculum Evaluation Committee rated *Everyday Math* high in support of MMSD standards. However, *Everyday Mathematics* does not currently support the MMSD instructional balanced math framework due to a spiraling curriculum design, expected pacing guide, and constraining lesson sequence requirements.
   b. The 2005 Committee rated *Investigations* high. The committee noted that *Investigations* had gaps in the alignment within the number, operations and algebra standards and therefore required supplementation. However, *Investigations* can support the new instructional framework due to its modular design.
   c. The Committee recommended piloting *Math Expressions*. It has a structured pacing guide and whole group lesson design that is inconsistent with the MMSD instructional framework. However, some teachers have modified the design to meet the balanced math framework.

2. The balanced mathematics curricular resources must allow for flexible use in order to provide differentiated instruction for all learners, including students in a multi-age classroom.
   a. *Everyday Mathematics* requires students to proceed sequentially through every lesson as described in the Teacher Guide, without variation.
   b. *Investigations* modules provide units that can be implemented separately. Other materials can easily be substituted into the suggested sequence.
   c. *Math Expressions* requires students to proceed sequentially through every lesson as described in the Teacher Guide. The curriculum guide provides some alternate problem choices for differentiation but not in-depth teacher guidance about learning trajectories and who should use them.
3. The balanced mathematics curricular resources should support the District’s bilingual education program by supplying materials in Spanish or by granting permission to translate the program. It should be feasible to translate all student materials.
   

Experience with current materials adds the following refinements to the selection criteria:

1. The balanced mathematics curricular resources should provide teachers with content explanations and student work examples.

2. The balanced mathematics curricular resources should provide guidance for differentiation of mathematics content and teaching strategies based upon the mathematical knowledge and skills of the individual student.

3. The materials should incorporate the current research in children’s development of mathematical knowledge.

4. The balanced mathematics curricular resources should be non-biased and culturally responsive to provide meaningful and memorable mathematics for all students.