What Principals Need to Know about Teaching Math


*What Principals Need to Know about Teaching Math* is one of a series of research-based guides developed by NAESP and Educational Research Service to “equip principals with the content-area expertise they need to serve as effective instructional leaders.” This volume begins with a discussion of some current issues in mathematics education and then addresses such essential elements of high-quality mathematics programs as “how mathematics should be taught, ways to use assessment data to inform mathematics instruction, and approaches for assisting students who are struggling in mathematics.”

Although this resource was written for principals, much of its information also could be used as the basis for teacher discussions on math instruction. For example, the authors talk about effective mathematics classroom environments, characterized by:

- Children actively engaged in doing mathematics, not just sitting back and watching others;
- Children solving challenging problems that generate new knowledge and excitement;
- Interdisciplinary connections with special attention to use of “stories” that provide authentic problem-solving situations and engage children in “connecting the language of mathematical ideas with numerical representations”;
- Opportunities for group work with time to “share ideas and solution routes with peers” since such discussion helps students broaden their understanding of concepts;
- Opportunities for children to communicate during lessons, to “talk about mathematics” with support from the teacher, and to respectfully challenge each other’s solution routes;
- Use of manipulatives to provide concrete representations for newly presented abstract concepts; and
- Use of technology, such as calculators, that allow students to “explore relationships and patterns with numbers.”

Other “good teaching” strategies are provided in a chapter on providing support for struggling students.

Finally, in a chapter titled “The Principal’s Role in Observing and Evaluating Mathematics Instruction,” the authors write more about the characteristics of effective mathematics instruction. For example, teachers should be asking students “explain” and “why” questions in addition to their answers, since such discussion strengthens students’ understanding of concepts.