EDITORIAL

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In recent months I have continued to follow with interest the national debate concerning the K–12 mathematics curriculum. Often the debate has centered on what some have termed as reform or standards–based mathematics curriculum. Proponents of such a curriculum suggest that the current mathematics curriculum is too narrowly defined, does not actively engage the learner in doing mathematics, places too much emphasis on paper and pencil computations and procedures, and does not make adequate use of technology. Opponents claim that the proposed standards–based curriculum does not focus enough attention on the "basics," allows students to become overly dependent on technology, and focuses on student activities instead of on the mathematics itself. Interestingly enough, both "sides" in this debate cite research in support of their arguments.

In the most recent issue of *Journal for Research in Mathematics Education*, James Hiebert (1999) has written a very interesting article, "Relationships Between Research and the NCTM Standards." In his article, Hiebert makes that point that there are limitations to what we can expect research to tell us. In particular, the "best" curriculum or instructional approach cannot be proven by research. There are simply too many variables beyond our control. Research certainly can provide us with valuable information about curriculum and pedagogical issues and can be used to help us make informed decisions. Curriculum and pedagogical decisions, however, really should be based on what appears to be true for most students, most of the time, in a given situation.

Hiebert (1999) goes on to suggest that there are some things we can learn from research. These include:

1. The current state of mathematics teaching and learning.
   What is the current state of classroom teaching?
   What are students learning from traditional instruction?
2. How effective are the new programs?
   What are the new teaching methods?
   What are students learning from alternative programs?
3. Explaining the lack of implementation of new programs (p. 11–15).

Having spent a great deal of time working with teachers who are attempting to implement alternative mathematics curriculum materials or instructional approaches, I am convinced that sufficient teacher preparation and development are crucial to this implementation. As a colleague of mine, Ira Papick, has observed, "The more mathematics you know, the more mathematics you see in these materials." The alternative programs require teachers to teach in ways that are fundamentally different from the way they learned mathematics and the way they have taught it. Such changes are difficult and schools often do not provide teachers with sufficient ongoing support and professional development. As Hiebert so correctly observes,

> We now know that we can design curriculum and pedagogy to help students meet the ambitious learning goals outlined by the NCTM Standards. The question is whether we value these goals enough to invest in opportunities for teachers to learn to teach in the ways they require. (p. 16).

J. Hiebert, "Relationships Between Research and the NCTM Standards," *Journal for Research in Mathematics Education*, 30, (1999), 3–19.