

The New New Math

A mother describes her quest for understanding of a recent trend in math instruction.
By Larysa Foty

When my son came home with his new grade 4 math text, *Quest 2000*, I noticed it had a whole new look. After a lot of frustration trying to help my son with his assignment, I decided to find out more about *Quest*.

From OQE, I learned that there is no 'real' research on the series, since no objective evaluation has ever been carried out. I did get a lot of anecdotal evidence, however, mainly the comments of teachers in the US. Here is a typical passage, this one describing a STATE school staff meeting.

"There were teachers from first, third and fifth grade who were unanimous *Quest 2000* has been a disaster and that most teachers hate it. The fifth grade teacher said she now has the first wave of students who started *Quest* in first grade and their math skills are 'horrible.' She called them our '*Quest 2000* babies' and she was concerned about how we are going to remediate them...."

The results of a survey conducted by Wayne Bishop, Professor of Mathematics at California State University, were also disturbing. He surveyed all the teachers (grades 1 to 5) in Roland Heights, California who had used *Quest 2000*. He found an "unusually large number of teachers who disapprove of this curriculum."

- "It's the worst excuse for a math program I've ever seen!"
- "Trained and experienced in mid-and eastern US schools. Poorest system taught thus far."
- "It is totally ineffective! Get rid of it!"

Of course, there were also some positive comments, such as "Q2K has been an organized, easy-to-teach math program." Puzzled as to how a major textbook could arouse such controversy, I decided to learn more about the current thinking on mathematics teaching and why schools are adopting programs like *Quest 2000*.

The debate is between two diametrically-opposed groups. On the one side of the debate is a group of educators who are opposed to traditional methods of teaching math. I'll refer to them as the Reformers.

The Reformers argue that the computation-focused curricula and methods used in the past are ineffective and seriously deficient for modern-day needs. Only superficial learning, according to the Reformers, is gained when students copy the teacher's examples and then practise them at home. They assert that students in traditional classrooms are merely manipulating symbols and engaging in mindless parroting.

The Reformers want students to make sense of mathematics, to become better thinkers. The teacher, they say, should strive at having students develop a deeper and fuller understanding of concepts. In addition, they argue, more attention should be paid to problem-solving, as this is the critical skill needed for tomorrow.

A fuller explanation of the Reformers' argument can be found in the February 1999 issue of *Phi Delta Kappan*: "The Mathematics Miseducation of America's Youth," by Michael J. Battista. (www.pdkintl.org)

The Reformers' theory is called 'constructivism,' a theory premised on the belief that learning is an active process. According to the theory, students will learn better if they actively construct or discover the information for themselves, rather than passively take it in via a textbook or teacher. *Quest 2000* is a constructivist text.

On the other side of the debate is a group of educators who question the need to tamper with something they believe is not broken. I'll call them the Traditionalists. The Traditionalists point out that, while it is true that self-constructed knowledge is likely to be well remembered and understood, it is

not the case that constructivism is the *only* path to meaningful learning. Nor is it true that self-constructed knowledge is superior to knowledge gained by other means. Once a student knows his times tables, it is irrelevant how he learned them.

In fact, according to the Traditionalists, constructivist methods are not particularly effective. Quoting from E.D. Hirsch, Jr.:

"It is true ... that self-generated student-constructed learning (discovery learning) is sometimes better retained and more readily accessible than constructed learning that is teacher-induced. But if discovery learning is well retained, it also has drawbacks. It takes more time and is sometimes insecure in its results — insecure not in the durability of what is remembered but in the content of what is remembered. Students 'discover' all sorts of things, some of them irrelevant to the purposes at hand and some of them wrong. To choose the discovery technique over another is to choose one application of constructivism over another. Such choices are practical ones to be determined on each occasion by educational goals and results, not by special sanction from neutral psychological theory. Discovery learning must, in the end, be justified by its observed effectiveness, and on that score, the results emphatically do not justify an extreme or exclusive reliance on what is currently called 'constructivist' practice." (*The Schools We Need*, pp. 134-135)

As a parent, I feel like a helpless pawn caught in the crossfire of two opposing armies. Given that *Quest 2000* is being adopted by many Ontario school boards, I would like to see an objective comparison of the math results of several *Quest 2000* boards with the results of several other school boards using a non-constructivist text.

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