

Stone Age Math

Discovery math programs waste time on easy concepts, leaving no time for harder ones.

By Ralph A. Raimi

A simmering controversy about the math programs in the Penfield, NY schools should be of equal interest to a good number of other school districts that have recently been using the same “reform” math programs in their own schools.

In Penfield, the parents are in open opposition, and have presented a petition signed by 700 or so residents asking the Penfield Board of Education to permit an alternative choice to parents.

An article in the local paper about the dispute characterized the disagreement as if it were a question of style. A prominent sidebar article was headlined “What’s at Stake?”, and began its answer with “the way the children are taught math”.

But this is not the issue, even though the boxed explanation went on to say, “The new curriculum encourages students to develop problem-solving strategies instead of giving them a list of formulas to memorize”.

Now if you put it that way, there is no contest. Goodness, who can prefer “a list of formulas to memorize” to students “developing strategies”?

But there is a contest, a serious one, and not the one suggested by catch-phrases handed out by the publishers of the reform programs. It is not a contest between rote memorization of meaningless symbols and deep understanding of problem-solving strategies.

Those are not the only two choices, even though the National Council of Teachers of Mathematics and the colleges of education invariably paint it that way, repeating it so often that even the newspapers have come to believe it.

But as in Penfield, parents across the country, now with the support of scientists and mathematicians not previously involved in school mathematics, have also been finding their voices.

The real contest in Penfield — and hundreds of other school districts across the country — is between mathematics and non-mathematics, between academic content and childish time-wasting, between what children can learn and what the present Penfield curriculum is pretending to have them “develop”.

A good mathematics program takes advantage of the mathematical discoveries of thousands of years of civilized effort, while Penfield has them counting with sticks, starting history all over again. Arithmetic is not trivial math, and it certainly will not be “discovered” by school children. It must be taught and practised.

Arithmetic is not “a list of formulas to memorize”; its algorithms, such as “long division” and “invert and multiply”, are not made obsolete by hand calculators. They are not merely “ways to get answers”. Their understanding is basic to the understanding (not the “memorization”) of more advanced mathematics.

When teaching is governed by a program that absolutely does not contain needed information, there is no “way of teaching” that can overcome the gap. By the time Penfield students get to grade 5, they are a good two years behind Singapore students of the same age. International comparisons of student achievement show Singapore at the top and the United States very close to the bottom.

The trouble is the lack of real math. The style of teaching is not the problem; it is the material. If experience in education has any lesson to offer, it is this: Children tend not to learn what they are not taught.

(Adapted with permission from “Why American Kids Aren’t Learning Math” in Greece Post, July 8, 2005. Dr. Raimi is professor emeritus of mathematics at the University of Rochester.)

Discovery Math

*(From TERC Investigations[®]:
for use in Grade 5 and
“suitable for Grade 6 too”)*

Number of students in your class

Suppose you get 6 cents for each bottle you return for recycling. For each problem show how you found your solution.

1. You have collected 149 bottles. How much will you earn?
2. If you share what you earn with one friend, how much will each person get?
3. If you share what you earn with two friends, how much will each person get?
4. Find the fairest way to share what you have earned with everyone in our class, so there is no money left over. How much will each person get?

Singapore Math

(Workbook Grade 5B)

24. Adam bought 8 note pads at \$1.45 each and 10 towels. He gave the cashier \$100 and received \$46 change. Find the cost of a towel.
25. A group of children went swimming. $\frac{3}{8}$ of them were girls. If there were 40 boys, how many children were there altogether?
26. Three boys, Juan, Seth and Jared shared a number of stamps in the ratio 3: 5: 7. If Seth received 45 stamps, how many more stamps did Jared receive than Juan?