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April 13, 2000

# Math Teachers Back Return Of Education in Basic Skills

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In an important about-face, the nation's most influential group of mathematics teachers announced yesterday that it was recommending, in essence, that the arithmetic be put back into mathematics, urging teachers to emphasize the fundamentals of computation rather than focus on concepts and reasoning.

A decade ago, the National Council of Teachers of Mathematics galvanized math educators from kindergarten through high school by preaching that it was more important for students to understand how they arrived at an answer, rather than the answer itself. In the process, they de-emphasized such basic computational skills as memorization of multiplication tables. As their proposals were put in place by hundreds of school boards, parents and even some teachers and university mathematicians began to rebel.

Yesterday, after being on the defensive for years, the council issued a revision at its national convention here that critics and even some supporters of the old curriculum said was a retreat. While not abandoning its original agenda, the council added strong language to its groundbreaking 1989 standards, emphasizing accuracy, efficiency and basic skills like memorizing the multiplication tables.

The message, said Joan Ferrini-Mundy, chairwoman of the committee to revise the standards, is: "Get the right answer." Releasing the revised standards at a news conference here, during a convention attended by 18,000 math teachers, Ms. Ferrini-Mundy said that students must be fluent in arithmetic computation, use efficient and accurate methods, and understand those methods. They should know their basic addition, subtraction, multiplication and division combinations as well as understand them. The new document, the 402-page "Principles and Standards for School Mathematics," is the first major revision of the council's influential standards.

The change is likely to have a huge impact on the way mathematics is taught in the United States, since the council's document is the closest thing this country has to a national curriculum in mathematics. The 1989 standards have been adopted in part or in whole by 49 states, according to Glenda Lappan, president of the council of math teachers. The standards have shaped what goes on in countless classrooms, dictated the design of standardized tests and inspired widely used curriculums.

In New York State, for instance, fourth- and eighth-grade mathematics tests introduced last year give partial credit for the right answer, and full credit only if the student is able to explain how he or she arrived at that answer. For more than a decade, students as young as kindergartners have been encouraged to use calculators rather than computation; memorization, even of multiplication tables, has been spurned, and children have been given credit for arriving at reasonable rather than accurate answers, the implication being that there is no one right way of doing math. The council's documents have urged this approach as a better way of teaching minority students, female students and others perceived as disadvantaged or afraid of math.

Officials of the council said yesterday that they were not conceding error; rather, they said, they had been misunderstood. In trying to make mathematics more accessible to large numbers of students, and to make the point that mathematics learned without understanding will soon be forgotten, they had, perhaps, preached too fervently, some council members said. The previous stress on arriving at reasonable rather than accurate answers had been too readily interpreted as a way of "dumbing down" math, they said, when the intention was to reach more students.

"We've learned to be more careful in our language," said Alan Schoenfeld, one of the authors of the new high school standards and a professor of education and mathematics at the University of California at

Berkeley.

Lee V. Stiff, president elect of the mathematics teachers' council, insisted that despite the protests of parents, the old standards had not done any harm. Asked about what could be done about "the lost generation of students," Mr. Stiff snapped back: "There was no such generation." Mr. Stiff said he still subscribed to the philosophy that, "If I only teach it the way I understand, then only students who understand it the way I do will be successful."

Some critics of the old standards said yesterday that while encouraged by the revisions, they feared they might be too subtle to radically change the course set in 1989, especially given the huge investment in curriculums, testing and teacher training to comply with the earlier standards.

"This document does throw a bone to the basic skills crowd," said Tom Loveless, director of the Brown Center on Education Policy at the Brookings Institution. "The overall tone is less strident. But it doesn't underline and put in bold letters that it is important for basic skills to be learned."

California was the first state to embrace the 1989 standards, and has also been at the center of the parental backlash against them. An organized group of California parents called Mathematically Correct has denounced the standards as "fuzzy math," saying that many teachers become so preoccupied by exploration that children never learn the standard rules they need to move on to higher-level algebra and calculus.

Responding to such criticism, California recently introduced highly specific math standards for each grade, specifying, for instance, that children in fifth grade should be able to add, subtract, multiply and divide with decimals, or be able to multiply and divide fractions.

In November 1999, nearly 200 mathematicians, physicists and other scholars wrote an open letter to Richard Riley, the secretary of education, urging him to withdraw his department's endorsement of 10 mathematics programs found to be in compliance with the National Council of Teachers of Mathematics standards of 1989.