The State of the Union and Mathematics

In his State of the Union message delivered on February 4, 1997, President Clinton stated:

"… my No. 1 priority as president for the next four years is to insure that Americans have the best education in the world."

In order to achieve this, he proposed spending 51 billion dollars next year as "an unprecedented commitment to these goals." He then proposed a "Call to Action for American Education" based on ten principles.

In my roles as mathematician, educator, father of school children, taxpayer, and social commentator I applaud the president for setting education so high on his priority list. I seriously question the efficacy of many of his principles.

The first stated principle is a call for a "national crusade for education standards." The mathematics community was among the first to propose standards, as reflected in the National Council for Teachers of Mathematics (NCTM) standards promulgated in 1989. These standards have been adopted by many schools, including the one which my sons attend. Those who have read the many opinions in these *Notices* will note the various reactions these standards have elicited within the mathematical community. My own experience is that the schools, and in particular textbook writers and teachers, are not able to implement these standards because they do not have the mathematical maturity required to understand the reasons for inclusion of many of the recommendations, they do not know how to communicate them to students, and they do not know what roles the various standards play in the "big picture" of mathematics and the world.

The NCTM standards call for mention of non-Euclidean geometry in high school mathematics. How many high school geometry textbooks mention this subject? How many teachers include this in their curriculum? Why is it included at all? My point is not to question whether the inclusion is justified, but rather to illustrate the difficulty in implementing standards within the current context of pre-K–12 mathematics education. Equally difficult is how one changes undergraduate education in our many colleges and universities so that future teachers will be able to teach "up to the standards" that are being proposed. Just this one example suggests a "sea change" in how we educate future teachers. There are many more that come to mind.

President Clinton's second principle calls for getting the best teachers by budgeting funds to enable 100,000 more teachers to attain certification as master teachers. This principle is to be applauded, especially in view of the criticism leveled in the paragraphs above.

President Clinton's eighth principle proposes "HOPE" scholarships, two years of a $1,500 tax credit for college tuition, and a tax deduction of up to $10,000 a year for all tuition after high school. Pundits have already questioned how these credits will affect grades, noting that in places where tax credits are tied to grades, grade inflation has already taken place. I question how this principle jibes with those principles that recommend improved standards, which imply, in my mind, stricter standards for passing courses and increased demands on the performance of students, especially those who plan to become teachers.

Finally, the president proposes connecting every classroom to the Internet by the year 2000. I believe the costs involved are not justified by a corresponding improvement in the quality of education. The time wasted in the classroom by students waiting for a Web connection to a site that will not yield quality information would be better spent reading today's textbooks, poor as they are. What is really needed is released time for the teachers, who can search the Web at their leisure, download the information desired, and then present it to the students in an orderly manner.

In conclusion, I believe that the 51 billion dollars could be better spent than in most of the programs President Clinton proposes.

—Robert Fossum

Editor's Note: The views expressed in editorials are those of the author alone and should not be construed as the opinion or policy of the editorial board or of the American Mathematical Society.