

Mathematics Standards: A new direction for California *Address in the Northridge Conference, May 21, 1999*

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It is an honor to be here. I am supposed to say a few words about mathematics education in California. Since this is the height of the basketball season, I hope you don't mind if I use the NBA as a reference point.

We are like a team in the NBA championship series, and this conference may be thought of as a rally on the day before the first game. It has been a hard battle to get to this point, but we could not have done it without the leadership and support of the State Board of Education — and I know it is one of the rare occasions to see Janet [Nicholas] and Marion [Joseph] together in public. I have not had the opportunity to thank both of them and I should not fail to do so now and say “thank you”, not only on behalf of all of us here, but also on behalf of all the children of California. Thank you very much indeed.

So now back to basketball. A good team does not show up for the finals just for the honor of making it this far. *It wants to win the whole thing!* The same is true of us here. We are not satisfied with the writing of two excellent documents [The Mathematics Content Standards and the Mathematics Framework] because our goal is to produce good mathematics education for California, and we ain't done nothing yet. We are therefore gathering here today, not to celebrate our gains, but rather to firm up our resolve for the

real battle ahead. I can see at least three major obstacles in realizing this goal.

The first one is how to get the message of these new documents out to the teachers. Because of the professional mathematicians' neglect in the past several decades — and I emphasize decades, not just in the immediate past decade which, of course, is heavily connected with the reform — this long period of neglect has led to all kind of misconceptions and errors that have crept into the school mathematics textbooks as well as the mathematics classrooms.

The new Framework and Standards offer a version of mathematics that is, to my best knowledge, free of these misconceptions and errors. Unfortunately, I don't think the teachers have gotten these messages, so something must be done. Among the mathematicians here, I'd like to urge all of you to make yourselves available to talk to school districts about the mathematics in the Standards and Framework, or in fact about the Standards and Framework themselves, and please do so aggressively because it's urgently needed. I also have a suggestion to the State Board, and it is that we should organize large conventions for teachers, strictly devoted to explaining the basic spirits of these two documents.

Until the teachers know what the new documents are trying to do, the documents will remain two more documents on the shelf, ready to collect dust.

The next obstacle is the lack of good textbooks. California has just gone through the first round of textbook adoption using the new Standards as criteria, and I believe the publishers have now gotten the idea that for once in California, we're serious about mathematics. However, recognizing what is bad, recognizing the need, is not quite the same as being able to produce something good.

The publishers need your help. Mathematicians, teachers and faculty alike should seriously consider making themselves available as consultants or maybe even co-authors in the on-going enterprise of writing good texts, and hopefully with this participation, we can maximize the chance of a successful outcome.

But the biggest obstacle and the last, is that we do not have nearly enough mathematically knowledgeable teachers. Without the teachers to deliver the message of the printed page, there can only be bad mathematics education. The main difficulty with the professional development of teachers is that it is inherently complex. To be able to reach out to the majority

of the teachers, we need an extensive infrastructure throughout the state. But such an infrastructure cannot be erected overnight. Moreover, because professional development cannot be done by mass communication, we need a large number of competent people to do the job. The sad state of the professional development of mathematics teachers is such that I would be happy to have a small number of such people.

And finally the problem of money. Professional development is extremely expensive, and forgive me for saying it, but the State Government has not provided nearly enough funds to get the job done.¹

What we have at the moment are a few State-sponsored units to do professional development of the mathematics teachers that go under the name of the California Mathematics Project (CMP). Whatever you thought of CMP in the past, I urge all of you to spend some time now to help guide the CMP projects to peak performance. Visit the project near you. Offer your constructive criticisms, with emphasis on “constructive”. If you do so in a civil and courteous manner, your comments will always be welcome. CMP uses your tax dollars, and you are entitled to demand your money’s worth.

It remains for me to note that this conference marks the symbolic point at which our roles are changed for good. It was not so long ago that many of us were the most vociferous of critics. We voiced our strong disagreements with what was going on in mathematics education, and our criticisms were essential in producing a new set of Standards and a new Framework. But now, starting today, we are no longer outsiders looking in. We *are* the insiders. Although we got here by our criticisms, we cannot achieve good mathematics education by criticisms. There is a Chinese saying: *You can win an empire on horseback, but you cannot govern an empire on horseback.* “Horseback” of course refers to the way warfare was waged in the bygone days. So it is that although we have won the battle of words, we will not accomplish much at this point with words. What we need are actions. It is our turn to produce. And actions don’t come cheap. We have to bear down and get the work done.

Finally, looking ahead, what do I see? I think we have a grace period of three years. But if in three years we do not manage to produce any tangible improvement in mathematics education, the public will demand another mathematics education reform and all our efforts up to this point will go to

¹ **Added March 31, 2000:** Governor Davis’ Professional Development Insitutes have improved on the situation somewhat.

waste. Facing such a task of extreme difficulty, I don't think any of us can promise success. What we can promise is to do our very best. And we will.