



PUTTING MATH AT THE FOREFRONT:

A Conversation With Former NCTM President Johnny Lott

MISSOULA, Montana—Thanks to his math teacher’s powers of persuasion, Johnny Lott’s parents agreed to send him to a math and science camp during the summer before his senior year of high school. “It’s what solidified my interest in mathematics,” recalls Lott in his west Tennessee twang. “I was fascinated that there were people who studied mathematics and made a living at it, and kids like me who truly enjoyed studying it.” Lott went on to earn a doctorate in mathematics education and to serve as president of the 100,000-member National Council of Teachers of Mathematics (NCTM). He’s taught more than one generation of mathematics teachers at the University of Montana, Missoula, and now presides over the Center for Teaching Excellence there. In a conversation with *Northwest Education* Editor Rhonda Barton, Lott reflects on the dangers of low expectations for mathematics students, why even experienced teachers need continuing professional development, and the impact of No Child Left Behind.

Q. *Before becoming a college professor, you taught high school mathematics in Atlanta and then, on a sabbatical from the university, you taught in a tiny Alaskan fishing village. What’s changed since you were in the secondary school classroom?*

There are many things that are alike: The natural enthusiasm and the interest of kids—especially young children—in mathematics have not changed. If anything, it may be more heightened now than back then. The things that have changed are the constant barrage of technology and the influence of technology and communications on our lives. Today, wherever you are in the world, you have access to other people, other ideas. That’s had an effect on mathematics and the way kids learn. It’s also affected expectations. It seems to be a popular pastime of the media to talk about how poorly students do in mathematics, and I never heard something like that when I grew up or even when I started teaching. Now,

you can’t turn on a TV or open a magazine without seeing this in front of you. There’s something else too: My parents were only educated in high school but I never, ever heard them say ‘I can’t do math.’ It just didn’t happen. Now, that’s a common statement. That has to have an influence on kids.

During your NCTM presidency (2002–2004), you spoke out on the issue of the achievement gap between white students and their Hispanic and black peers. What progress are we making as a nation in addressing that problem?

A few of the latest testing results have shown some fairly significant gains in some segments of the population, and that’s encouraging. One of the bigger issues with the achievement gap is teachers who don’t have the same high expectations for all kids. [When] they have lower expectations for some segments of the population than for others, they’re creating a real disadvantage.

It’s interesting that when the NCTM task force on the achievement gap was doing its report, one of the things it said flat out is that you should address the problem for what it is: You should address the racism, the elitism, and the classism that is behind part of the achievement gap. That’s a problem that’s bigger than mathematics but you get the same kind of feeling when you read about the work of Robert Moses and his Algebra Project, which started in some large cities in the Northeast. He’s now moved it to Mississippi where he basically says algebra is a civil right. When you put it on that level—and I do believe it (and education in general) is a civil right—then you start trying to get at the real root [of] what the problems are. The achievement gap is not something that’s going to be solved in a hurry, but having the expectations and believing that all kids can do math is a start.

What impact do you think No Child Left Behind has had on the issue?

I think No Child Left Behind was created by a strange coalition of people for all the right reasons. We know there's an achievement gap and that some kids aren't succeeding as well as others. NCLB has put it squarely in our faces that we're not doing some of the things we [as teachers and schools] need to be doing and I applaud that. But implementation of some of the aspects of NCLB is a bureaucracy run amok when you look at some of the implemented practices. I want to give you an example: In order to try to bring up test scores in an elementary school in the rural South, one particular school was testing its kids in fourth grade four times a year on standardized tests to see if there was any improvement. I had a call from a teacher there who said, 'I don't know what to do. My administrators are saying to me my students aren't showing gains on these tests.' Then we started looking at the tests and saw that they don't use the same test or even test the same topics, so to say there are no gains makes no sense. Things like that shouldn't happen: There's got to be a bit of common sense.

When you look at NCLB and the emphasis it has put on mathematics, we have the potential right here to put math at the forefront and do some positive, positive things. I don't think that's happened. I think something has gotten lost in the process and the only thing I can put my finger on is the massive testing effort to the detriment of education, in many cases.

You've stated the need for teachers to continue to receive professional development, no matter how experienced they are. Why is that so critical?

Until I was in graduate school, I never had a course in statistics or data analysis. Right now, you find data analysis in every middle school textbook. That's just one example of how the mathematics has changed over time but the teachers weren't prepared when they were in school to handle it. Even if they're experienced teachers, they may know only what's in their textbooks. Unless they've done professional development or continue to do it, they're not going to know what's facing them.

What does good professional development look like?

This is something I've thought about a lot. Good professional development first has to challenge teachers and it's got to challenge them on many different levels. Participating in professional development and learning the same thing they already know is not going to do them any good. Neither is generic noncontent-specific professional development.

One of the things good professional development can do—specifically in mathematics—is help teachers understand what current content is building on from the past and where it's going in the future. We're past the stage that we should just be looking at one piece of content from one period in time.

Equally important is teaching strategies because when you talk about the achievement gap, the diversity we have in

classrooms today, almost everyone agrees that teachers have to have many different kinds of teaching strategies, and it is the case that what worked yesterday may not work tomorrow.

The other piece, because of the testing world we live in, is how you take the assessment and apply it in your classroom so that it makes sense to improving student learning. It is very hard to do but it's something that has to be there, and we've barely scratched the surface on professional development in that arena.

In a state like Montana that has very small, rural, and remote schools, how can math teachers get the professional development they need?

One of the things schools need to realize—especially smaller schools in rural states, like all over the Northwest—is you probably can't individualize professional development at the small-school level. You almost have to combine with other schools or figure out other ways to do the professional development [and] get your teachers out to interact with other people.

We have to figure out how to better use online professional development. I don't think that's the be-all and end-all for professional development by any stretch of the imagination, but it is a necessity. NCTM, when I was president, appointed a committee that has been experimenting with how they could take a topic like algebra and put it in all their regional meetings around the country, make it a focus of their annual meeting, and then have online professional development in that area during the year so it's a focus-of-the-year effort. It'll get refined as time goes on, but online has to be part of the solution. That's not a complete solution because when you do things only online, you've lost all the personal part of it.

I think every rural teacher needs a mentor or e-mail pen pal to bounce ideas off continually. If you put very young teachers out in rural areas, if they don't have someone to talk to and mentor them, my guess is they're not going to last very long. And we can't afford to waste our teachers.

If you could wave a magic wand and change one thing about the way mathematics is taught in this country, what would it be?

There is no magic bullet, but mathematics is a lot like literature. Literature has all these different genres: the novel, short story, poetry, drama. In math, we've got exactly the same thing: algebra, geometry, data analysis, statistics, calculus. We're still in a world in the United States where we treat these as isolated genres. I think it's a far better program for kids, especially at the precollegiate level, to do integrated mathematics where you weave in and out of those different topics. I think there are some good examples from across the world where integrated mathematics is working far better than the system we use in our high schools right now. ■