Richard Bisk – Comments to National Mathematics Panel[•] – September 14, 2006

I'm Dr. Richard Bisk, Chair of the Mathematics Department at Worcester State College. I've taught in the Massachusetts State College System for 25 years. Few of our students arrive prepared to do serious work in mathematics. This year 24% of our 726 first year students need remedial work in math.[*] Only 26 are currently taking courses in our calculus sequence.

I'm more alarmed by what I see in my classes. There are large numbers of students whose mathematical development seems to have stopped at the middle school level. They are uncomfortable dealing with fractions and percents. They view math as a meaningless set of rules to memorize and regurgitate. They avoid math. Many of these students go on to become elementary teachers.

If your child had a teacher who was reading at the 10th grade level, you might be concerned. If they were reading at the 6th grade level, you'd be outraged. But that's the situation that we have in mathematics. And that's why many of the students who enter our college classrooms are operating at the sixth grade level.

I don't blame the teachers. I've taught mathematics content to hundreds of elementary and middle school teachers in professional development courses. They are incredibly dedicated and hard working. They are more than capable of learning the mathematics they need to become effective math teachers.

I blame the programs that prepare teachers and the departments of education that license them. Talk to a group of elementary teachers and ask them how many math classes they took in college. The most typical answer I get is "one." Then ask if the classes they took had any connection to the math they are actually teaching. The typical answer I get is "no."

Reading a first grade book is a simple task for most of us. Teaching a first grader to read is not. We need to provide prospective elementary teachers with a sequence of mathematics courses that develop a depth of knowledge of the math they will be teaching and the math that their students will go on to study. The Conference Board of Mathematical Sciences recommends at least 9 credit hours of such course work for prospective elementary teachers. Few programs provide anything close to this.

Our testing of new teachers should support this work at the colleges. In Massachusetts, only 17% of the elementary licensure test assesses math. It appears that you can get all the math questions wrong and still pass. As long as current graduates are passing the licensure test, there is little incentive to change graduation requirements for prospective elementary teachers.

In summary, colleges should require stronger and more appropriate programs of study in mathematics for preservice elementary teachers. And our licensure process should require them to demonstrate a strong understanding of the mathematics we expect them to teach. Without these changes, we won't see improvement in the next generation of students.

*The criteria used for remedial placement is a score below 71 on the Elementary Algebra Accuplacer text.

[•] Department of Education, National Mathematics Advisory Panel, Public Hearing, Cambridge Massachusetts, September 13-14, 2006. http://www.ed.gov/about/bdscomm/list/mathpanel/