Holding the Line for Quality in Mathematics and Science Teachers

Educators in public schools and colleges of education need to join ranks to maintain high standards.

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Of course there is a crisis in education! Of course there is a shortage of teachers in math and science! What would you expect given the conditions that exist in many of our public schools? If you were trying to hire highly qualified college graduates into a business that promised low prestige, low job security, low salaries, limited opportunities for advancement, out-of-date and inadequate equipment, and poor labor-management relations, how many good people do you believe you'd be able to employ?

When the average starting salary for teachers is less than $13,000 and graduates of engineering and business start at $23,000 and $16,000, respectively, it's not hard to see why bright, ambitious mathematics and science majors choose careers outside of education. After ten years, teachers can expect to make about $16,000; after 20 years about $23,000. Seldom is a teacher offered over $30,000 to remain in the classroom. When that kind of money is available outside education, what would you expect good people to do when they have talent, a family, and hope for the future?

In the past, we could count on the most capable women to fill the ranks of the teaching profession and to accept lower salaries. Now many more and better-paying positions are available to them after completing their undergraduate degrees. We can no longer use women to excuse lower salaries for teachers. They don't have to and are not willing to take less or to accept teaching as the only profession open to them.

Surprisingly, many good, dedicated math and science teachers have remained in the classroom. However, the number of new teacher education graduates in these areas has not kept pace with vacancies. This is a gap that will become even greater. In the next five or six years, according to the Pennsylvania Department of Education, that state may lose one-fifth of its current science and math teachers through retirement. This same loss will be recorded across all subject areas, not just in Pennsylvania but in many other states. We are facing a shortage of teachers in all content areas over the next decade. If the public believes a teacher shortage is going to be a problem only in math and science, they're in for a big surprise. As in the past, the immediate response to this shortage will be to look for a quick-fix. We are already seeing some teacher education institutions, pressured by low enrollment, offering make-shift certification programs that place limited content and professional education requirements on students. These programs provide easy certification in areas where we have a teacher shortage; but they lack the quality essential for preparing effective mathematics and science teachers. The sad thing is that some school districts and practitioners are working with these institutions to design such programs. Now, more than ever, we need to take a stand for quality rather than quantity in our teaching ranks.

Those of us who are responsible for
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curriculum and instructional programs in education need to act now to ensure that we don't end up with teachers who are certified yet unprepared to teach mathematics and science to our children. We can do this on two fronts.

First, at the district level we need to refuse to hire people who are inadequately prepared, even if they have certification. Our stance must be that it's better to have uncertified teachers teaching mathematics and science, and to admit that they lack adequate preparation, than to suggest that they are qualified because they have been certified through a quick-fix program. We are better off admitting our problems than trying to explain to the public why certified teachers lack the knowledge and skills to do a good job. In so doing, we will be much more likely to help the public understand the situation facing our schools: that we cannot attract and retain teachers under the present conditions.

On the second front, those responsible for designing certification programs, with the support of their colleagues in public schools, need to:

- Require content emphasis in certification programs that parallels the requirements of majors in mathematics, biology, physics, chemistry, and other content areas. This will require working cooperatively with the faculties in the content departments and professional organizations to identify the courses and content that are most appropriate for teaching and preparing public school students for the high technology society we face.

- Require at least a C or better in all courses in the certification program. This includes both the content and professional courses.

- Raise the grade point requirements for entering a teacher certification program in the junior year to at least 2.75 or 3.0.

- Refuse to accept students into certification programs if they fail to pass basic skills—reading, writing, speaking, and computing—competency exams.

- Require computer literacy of all students in elementary and secondary certification programs.

- Increase the proportion of elementary education majors who have a content specialization in mathematics and science. In addition, the preparation for teaching mathematics and science should equal the emphasis currently given to reading and language arts.

The leadership in colleges of education and in public schools must stand fast in pursuit of quality. Yet even this will be for naught unless the salaries and conditions in the public schools improve. We will just be preparing better teachers who will decide not to enter or to remain in teaching. In the past, the public has gotten just what it has been willing to pay for. The question now is: what kind of an education will we buy for our children in the future?