

STATEMENT OF ALBERT SHANKER, PRESIDENT  
AMERICAN FEDERATION OF TEACHERS, AFL-CIO  
BEFORE THE SENATE SUBCOMMITTEE ON EDUCATION  
UNITED STATES SENATE  
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I am Albert Shanker, president of the American Federation of Teachers, AFL-CIO. The AFT represents more than 580,000 elementary and secondary teachers, school paraprofessionals, health care professionals, civil service employees and university professors. We are deeply concerned with this problem and grateful that this committee recognizes that it requires federal attention. We are appreciative that you have given the American Federation of Teachers the opportunity to express its point of view.

Before addressing the specific proposal you have before you, I think it would be helpful if you first had a sense of how we view this issue. This presentation will be necessarily brief, but it is based on two more extensive documents which I ask be included in the permanent record of this hearing. One is a spot survey of what is going on in key AFT states and local districts. The other is a more extensive analysis of what needs to be done.

First of all, we believe that to tackle the problem of quality in math and science is to tackle the problems of education generally. In dealing with the math and science teacher shortage we have to face the problem of teacher recruitment and quality generally. The questions we ask at every level of government and the answers we offer will ultimately shape our entire system. We must be sure we ask the right questions.

The AFT also believes the federal government has a role to play in solving the problems that we are examining today. These hearings must

produce a commitment of federal dollars and leadership towards solving the shortage of math and science teachers. The problem is nation-wide and so must be the solution.

We must start by recognizing that with the economy in the midst of a near depression, public education is caught up with the need to defend itself in economic terms. The crisis in school financing captures the attention of all who are working for a quality system of public education. On top of this financial crisis is a second crisis of national scope and that is the wearing out of the nation's infrastructure and of the erosion of our country's position as the world's leader in science and technology and our decline as a world economic power. While public education should never be geared to react solely to immediate problems, to ignore these problems would be a disservice to our country and the nation's children.

Within this context, the crisis in math and science education is beginning to get the attention it deserves. Student test scores are down in these subjects. Curriculum requirements are often minimal and do not compare well with those of this nation's economic competitors. Students lose interest in these subjects early and fall away from them as soon as school course requirements permit. To compound the situation, severe teacher shortages are emerging in both subjects in all but a handful of our states, largely because of the failure of teacher salaries and job satisfactions to compete with those in the private sector.

Some have taken the popularity of the economy-education connection as an indication that fitting education specifically to future job skill requirements is the best way to keep the educational enterprise and the demands of the economy running in tandem. But even if this were the

sole purpose of education, which it is not, from the reports we have examined and the experts we have talked to, we have come to the conclusion that deciding on which specific job skills would be impossible.

Experience has already shown that it is hopeless to try to predict labor market skill demands with an exactness. The economy is simply too large and subject to change on very short notice. In fact, in the future many believe that everyone will be required to function in many jobs due to the demands of rapid job market change. The best job skill will continue to be an education that focuses on developing intellectual skills and the ability to adapt to new circumstances. This is an important premise if we are to solve the math and science crisis because many are examining the problem with invalid assumptions such as:

- \* Since high technology is growing (to what degree and at what pace are also debatable), the main concern of business with math and science stems from its interest in having a select group of students prepare for advanced education and training;
- \* Since math and science become defined as specific subjects at the high school level, this is where to focus all the attention;
- \* Because math and science are regarded as preparation for more advanced education, their decline is a "pre-college" problem rather than one for general education at all levels, including the elementary grades.

There is good evidence that all of these assumptions are wrong. But, unfortunatly, many believe this analysis of the problem and they are producing initial responses that concentrate on college preparatory students, ignore the importance of the early grades, and wrongly interpret business wisdom on the subject.

There is one other dimension to the economic-education relationship worth mentioning here: demographic patterns add additional considerations to any evaluation of the importance of math and science education. The U.S. Census predicts that within the next twelve years there will be

more than a 25% reduction in the number of 18- to 25-year-olds. At the same time, the proportion of this age group likely to be from non-English speaking and disadvantaged backgrounds will rise dramatically. The likely outcome of all of this is that competition among business for the better performing students will increase at every employment skill level. The more these less advantaged students are grounded in math and science, as well as, in other intellectual skills the more prepared they will be to function in our changing economy.

I am not going to go into an extensive description of the math/science problem here. That information is already on the public record and is covered in detail. It will be in the supplementary material we are submitting.

I will try to indicate briefly why we put our emphasis where we do. We believe that the most important change in the current direction is to put far more emphasis at the elementary and secondary level. Current solutions seem to be aimed at aiding those who might already be described as select students with well developed math and science capabilities, new emphasis must be placed on raising the level of math and science capabilities for all students and teachers.

#### THE EDUCATION ISSUES

For many of the economic reasons indicated above, and because of the requirements for a broadly informed citizenry able to deal with complex questions, we contend that all students should get more math and science. There is no national thrust to establish why math and science are important to the general education and why math and science literacy must be developed in the early grades. Nor is there a needed examination as to why all students should develop what John Dewey called,

"scientific habits of mind," no matter what direction their future employment takes.

Right now, this issue is often being advanced politically by specialty groups who are understandably more concerned with math and science education for future scientists and mathematicians. And at the federal level, at least, this is highly convenient for an administration that would prefer to spend as little money as possible on a few select, visible programs. To really address the problem comprehensively costs more than the present administration cares to spend on public education. The AFT bases its solution to the problem on two points:

- \* That school districts be encouraged and assisted in efforts to upgrade and add offerings in math and science. And that local education agencies will be pressed to tighten graduation standards for all high school students. While this is not a federal matter, we think it important to the federal government's interest in this matter, that school districts get help in dealing with those new problems.
- \* The elementary school level is extremely important and is now being virtually left out of the national discussion on this problem. The future math and science competency of the nation may depend on whether we put proper attention on elementary schools whether it be resource updating, access to computers, time spent on the subject matter, or upgrading the skills of elementary school faculty.

#### THE TEACHING FORCE

A teaching force to match these priorities will not be easy to come by. Our AFT survey points to two broad problem areas, as do most of the other data now available. First of all, people are not entering teaching in these fields in adequate numbers. The figures are well known. We think the major reason is inadequate teaching salaries. Without adequate salaries to attract talented people, it will be difficult to turn this trend around and, though, we realize that the billions required to make teachers' salaries competitive are not likely to come for the federal treasury, this problem will hamstring any effort to solve the shortage.

Secondly, even with those teachers already on the job, there are large numbers who are teaching out of their license or certification area with emergency credentials and sometimes just off the record entirely.

Finally, we note once more the lack of attention being focused on the importance of the elementary school teacher, even as these teachers acknowledge their insecurities in these fields and the unavailability of opportunities to improve themselves.

We ask for:

- \* Large-scale efforts at retaining on-the-job teachers, both those already certified or licensed and those seeking new qualifications in math and science. Retraining should also be available to those facing layoffs. Such efforts should involve special institutes, including summer institutes, and the use of other forms of inservice support.
- \* Special measures aimed at elementary school teachers which might include much of the above but would be specifically geared to their needs. At the elementary level there is need to upgrade all teachers in math and science skills, as well as to consider the supplementary use of subject matter specialists. No single solution will solve the problem.
- \* Provisions aimed at longer term recruitment, including scholarships and loans with forgiveness provisions that would allow loans to be cancelled for years spent in teaching. We would also like to see more outreach and counseling for high school students to urge some of the more qualified to enter teaching.

Our program priorities, then, are concentrated on: (1) upgrading curriculum for all students at all levels; (2) placing new emphasis on the importance of the early grades in teaching math and science; (3) retraining on-the-job teachers, again, with special emphasis on the early grades; and (4) recruiting new teachers with special scholarship and loan programs. While no long term solution for math and science teachers, and indeed, for all teachers, can fail to come to grips with the need for higher teacher salaries, we see the measure we have pointed to as the most productive

focus for the use of federal funds.

What should federal legislation seek to accomplish? Ideally, we would like you to come up with a method of putting federal dollars on the most important problem, qualified teachers, and that means recruiting. We also believe that districts and states should upgrade math and science curriculum standards. The only way to accomplish this where you have people teaching out of certification areas or with minimal standards is through retraining. Money should be focused to school districts with this form of shortage, or they will not have any incentive to upgrade their curriculum standards since that will simply exaggerate their staffing problems. Unless the federal government can put some money behind teacher retraining, all the talk about higher standards and higher graduation requirements can only amount to wishful thinking. We know you recognize teacher training as a priority for legislation, we believe it should have the highest priority.

In addition to the targetting issue and the need for a special emphasis on retraining, we support the use of competitive scholarships as one way of recruiting new people. Such a program should not be symbolic, nor should it have any particular relationship to elected officials, or be chosen by political appointees along with elected officials. It should truly be an attempt to attract the very best people available. We also urge you to consider loan programs that include forgiveness provisions for years served in teaching. Of course, a more extensive scholarship--one based exclusively on merit--would be to our liking, as well.

We also support the establishment of summer institutes and workshops for teachers. We would hope funds could be specified for institutes that

would meet the unique needs of elementary school teachers.

Likewise, we would urge that some attention to the elementary level be established by supporting research on elementary school problems. It would be counter-productive if research were limited to secondary school or post-secondary problems as seems to be happening at this time.

While considering research, I must point out that it certainly would be helpful to have a clearer picture of how the teacher shortage, teacher recruitment prospects, efforts to upgrade curriculum standards and in-service education actually combine at the local level. No national research, to our knowledge, actually gives a good national picture of how these variables interact locally. This is one of the reasons we ended up doing our own spot research. Such information would be very useful to have now when we are grappling with the funds distribution problem. Certainly it should be part of your future deliberations.

Let me conclude by saying that we are pleased the committee is making this effort. We welcome its recognition that solving the math and science problem is a matter for the federal government to address. We do not think the amount of money being considered is adequate to solve the problem. We believe that the purposes of all the bills considered should be specific and subject to evaluation of what really is achieved through the federal government's initiatives.

We assume you agree with us that the math and science problem is not just a pre-college problem and that whether it is the demands of the labor market or of our nation's need for a well-educated citizenry, we should make math and science matters of general concern for all students, future job-seekers and voters alike. This means we require more teachers and higher standards at all levels, from the elementary (even preschool) years right through high school. It is appropriate that the federal



government help public education with those goals and do it in such a way that the public can see how the money is spent. We believe that what we have suggested makes that more possible.

Thank you very much for considering the views of the American Federation of Teachers, AFL-CIO.

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