

TO: Members of the HJ25 Subcommittee

FROM: David Toscano

DATE: July 11, 2007

SUBJECT: HJ 25 Recommendations

I think we all understand that this nation and Commonwealth face substantial challenges in competing in the global economy. These challenges largely have to do with building a workforce with the skills necessary to ensure our competitive edge. Part of upgrading that workforce, whether it involves increasing the numbers of scientists and engineers or insuring that workers at all levels have the skills necessary to produce products that create value for Americans and the rest of the world, involves improving the teaching of math, science, and technology at all levels of our educational system. This is the approach of the American Diploma Project (ADP), a network presently consisting of 29 states and created by governors and business leaders (check out www.achieve.org).

In hearing the testimony of various presenters during the last year, I have been struck by the wide variety of concerns in this area. We have heard this from both the educational “experts” as well as leading employers throughout the Commonwealth. In my view, I believe our emphasis should be on K-12 education because I do not believe we will solve our problems overnight and we should attempt to “build capacity” for the future in our elementary and secondary schools. In this way, we will create the opportunity for students to move on to university and post-university education so we can generate scientists and engineers for the future. But in addition, and no less significant, improving math, science, and technology education will help create a competitive workforce of individuals who can take positions that do not require college degrees, but which are no less valuable to our economy.

I hope we can consider the following initiatives:

First, quality teaching should be at the center of our efforts. That means that we need to take those who are teaching math and science and upgrade their skills while we recruit more quality teachers into the field. To do this, I would suggest we explore the following:

1. Creating a Professional Development Grant Fund linked to our universities who provide educational training. Professional development will allow our math, science, and technology teachers to improve their skills and become aware of the “best practices” used in the field to inspire youngsters to achieve. This can help teachers who are proficient in their subject area but need a “brush up” and /or seek improvement. And it can also benefit other areas in our state where math and science teachers have little experience in their subject areas. We might do this by modifying the Virginia Mathematics,

Science, and Technology Grant Program that was passed as HB 1244 in the 2006 session. The bill, which was contingent upon funding in the Appropriations Act (and I do not know if that was approved), provided higher education grants to Virginia residents who were enrolled in a qualified undergraduate or graduate degree program in math, science, and technology. There is no reason why we could not modify the charge of this program to include professional development grants that would be provided to and administered by universities. Some funding would be necessary, but fairly small amounts of money could bring some dramatic benefits in this area.

2. We need to do a better job of rewarding those teachers that are the best in these fields. One way to address this would be by providing additional stipends to teachers who have been awarded National Teaching Certification in these fields. Again, this could occur within the Professional Development Grant Fund, with stipends made directly to teachers who qualify.
3. All grants rewarding teachers should be linked to a requirement that teachers teach in Virginia. Under HB 1244, SCHEV has the ability to link grants to the requirement of a person committing to teach in the Commonwealth for at least four years. If we support tuition forgiveness, and I think we should, we may already have a vehicle in place to get this done. We just need to make sure that the money has been appropriated.
4. We should also explore different ways of licensing math and science teachers for K-12 education. There are many qualified persons from the private sector and from the military who have retired, have great skills in math and science and possess wonderful abilities to communicate those disciplines to youngsters. There should be a different way to license them so that they may enter the classroom.
5. We should push the Department of Education to develop a “best practices” “web mentoring” program which would give teachers access to lesson plans and teacher tools via video and ways by which they can enlist other experienced teachers in the doing of their job.

Second, our curriculum should be creative, rigorous, and coherent. As one expert recently said, “sometimes we get the impression that in these disciplines, we teach everything everywhere on the theory that someone will learn something somewhere.” Such an approach is not the most efficient use of limited resources. In speaking with a number of principals, their suggestion is that we put math specialists in the elementary and secondary schools and that we give them the challenge of increasing math performance and interest among our students. Another argument for why rigor is important can be heard from university professors, many of whom argue that new students coming to college are unprepared for college math, even if they have had several AP courses. This is simply not acceptable and argues for a boost in the rigor of our curriculum. There is a growing effort to develop an Algebra II test that can be used in different states (I think 9 states are involved in this effort) as one vehicle for providing some coherence and additional rigor, but I leave it to the experts whether this is a good approach. Nonetheless, we should stress the importance of rigor and coherence as

concepts and ask the Department of Education to develop means to implement such approaches.

Third, we should explore the possibility of creating math and science academies within elementary and middle schools that would operate as after-school programs and which could be funded by grants to specific school divisions. These academies would take the “best and brightest” teachers from math and science disciplines and permit them to continue teaching after the end of the school day. Such “academies” could have multiple benefits. They could involve more youngsters in math and science education. They could increase the school day for education. And they could provide a way to increase compensation to our best math and science teachers without disrupting the traditional salary structures.

I have other ideas that could help universities and higher education, but I wished to focus on K-12, because that is where we can achieve the most long-term benefit.

I look forward to discussing these and other initiatives at our next meeting.