

Testimony of Margaret Spellings  
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On the Role of Education in Global Competitiveness  
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Mr. Chairman, Senator Kennedy, and Members of the Committee:

Thank you for the opportunity to speak with you today about the importance of education to maintaining our global leadership, and the President's proposed serious and innovative reforms that will prepare our children to become leaders themselves.

**THE CHALLENGE: TO INNOVATE EDUCATION**

America has long been innovation's home. When faced with a challenge, we invent the answer: from the first telephone to global satellite communications; from the first computer to the World Wide Web; from the Wright Brothers to Neil Armstrong. To Americans, innovation means much more than the latest gadget. It means creating a more productive, prosperous, mobile and healthy society. Innovation fuels our way of life and improves our quality of life. And its wellspring is education.

Throughout his Administration, President Bush has made innovation and education top priorities. The President worked with you, other Members of this Committee and your colleagues in the House, to pass the most far-reaching education reform in decades, the *No Child Left Behind Act* (NCLB). NCLB has brought high standards and accountability to public schools and sparked a mathematics and reading revival in the early grades.

While the U.S. is leading the world in science and technology and making strong reforms to its education system, the rest of the world is not standing still. America no longer holds the sole patent on innovation. Inspired by our example, countries such as China, India and South Korea have invested heavily in education, technology, and research and development. America now has billions of competitors throughout the world, challenging us to set our sights even higher.

Our educational leadership has been challenged as well, with many developed nations' students outperforming ours in international tests, particularly in math and science, an ominous sign for many American schools. These test scores are linked to a lack of challenging coursework, an ominous sign for many American schools. The impact may be felt well into the future. According to some estimates, America's share of the world's science and engineering doctorates is predicted to fall to 15 percent by 2010.

This global challenge requires bold action and leadership. America has done it before. Following the Soviet Union's 1957 launch of Sputnik, the world's first satellite, Congress passed and President Eisenhower signed into law the *National Defense Education Act of 1958* (NDEA). NDEA encouraged more college and university students to pursue degrees in engineering and it brought the public and private sectors together as partners to capture the interest, imagination and dedication of American students. And it worked. Within a decade, the number of science and engineering doctorates awarded in the U.S. annually had tripled, accounting for more than half the world's total by 1970.

Today, America faces challenges more difficult and complex than a single streaking satellite. The spread of freedom is spurring technological innovation and global competition at a pace never before seen. This trend makes it increasingly important that our economy be more flexible and responsive, to make sure that we continue to lead in innovation and technological development and to make sure we have a workforce that has the skill sets necessary to do so.

Education is the gateway to opportunity and the foundation of a knowledge-based, innovation-driven economy. Employers are increasingly looking for workers who have analytical, technical and problem-solving skills.

We have to run to keep up. A high school diploma, once desirable, is now essential, and, increasingly, insufficient. About 90 percent of the fastest-growing occupations of the future will generally require some post-secondary education. It is therefore unacceptable that among all ninth-graders, about three in ten do not graduate on time; or that for black and Hispanic students the figure is about five in ten. If current trends continue, by 2012, over 40 percent of factory jobs will require post-secondary education, according to the National Association of Manufacturers. And yet, almost half of our 17-year-olds do not have the basic understanding of math needed to qualify for a production associate's job at a modern auto plant.

Improving education is critical not only to America's economic security, but also to our national security. Today, not one but 3,000 satellites circle the earth. U.S. soldiers use the latest communications and surveillance technology to fight the global war on terrorism. Advanced math skills are used to identify and undermine terrorist networks. Government and the private sector engineer new ways to protect lives and infrastructure from harm. And the effort to spread freedom to other nations and cultures demands speakers fluent in languages such as Arabic, Farsi, Chinese, and Russian. Addressing these challenges will advance opportunity and entrepreneurship at home and promote democracy and understanding abroad.

Rigorous instruction, high standards and accountability are helping to raise achievement levels among American students, particularly in the early grades. As all students work to achieve proficiency in math and reading by 2014, an innovative education reform effort is needed.

America's civic, political and business leaders agree: To sustain our quality and way of life, we must act now. And President Bush is leading the charge by proposing investments and reforms through a number of key initiatives that I would like to outline today.

## **THE ANSWER: PRESIDENT BUSH'S EDUCATION AGENDA**

President Bush's answer to America's challenge begins with the American Competitiveness Initiative. This multi-agency Initiative will commit \$5.9 billion in FY 2007, and more than \$137 billion over the next 10 years, to strengthen education, promote research and development and encourage entrepreneurship. In the research arena, it will increase our investment in physical science and engineering research, the results of which will fuel technological innovation for decades to come. In the education arena, the initiative will bring together leaders from the public sector, private sector and education community to better prepare our students for the 21st century. The initiative will place a greater emphasis on math instruction from the earliest grade levels. It will ensure that high schools offer more rigorous coursework, including Advanced Placement and International Baccalaureate courses in math, science and critical-need foreign languages. It will inform teachers of the most effective, research-based approaches to teaching math. It will encourage professionals in those fields to become teachers themselves. And it will

evaluate all federally funded math and science education programs to ensure the most effective use of the taxpayers' dollars.

The President's High School Reform initiative will help ensure that a diploma becomes a ticket to success for *all* graduates, whether they enter the workforce or go on to higher education. It will bring high standards and accountability to high schools by aligning their academic goals and performance with the *No Child Left Behind Act*. Through assessments and targeted interventions, it will help educators raise achievement levels and close the achievement gap. It will also help alleviate the dropout problem by focusing more attention on at-risk students struggling to reach grade level in reading or math.

Finally, the President's National Security Language Initiative, announced on Jan. 5, 2006, will help more American students master critical-need foreign languages to advance global competitiveness and national security. This joint project, in collaboration with the Department of State, Department of Defense and the Director of National Intelligence, will train teachers and aid students in those fields.

## **THE CHALLENGE: KNOWLEDGE OF MATH AND SCIENCE**

In this changed world, knowledge of math and science is paramount. In the words of BusinessWeek, "It's a magnificent time to know math." "Math entrepreneurs" are translating the world into numbers—which translates into big salaries. According to the Bureau of Labor Statistics, new and replacement job openings requiring science, engineering or technical training will increase by more than 24 percent, to 6.3 million, between 2004 and 2014.

Of all of the recommendations contained in the National Academies' report, *Rising Above the Gathering Storm*, the highest priority is to vastly improve K-12 math and science education. Schools must help students develop the skills they will need to compete and succeed in higher education and the workforce, which are increasingly connected in this changed world. All Americans must be technically adept and numerically literate -- regardless of their chosen occupation -- so that they can make informed decisions and enjoy advancement in their careers. And this technically and numerically literate population must also yield additional practitioners of math, science, and engineering to meet the needs of academia and industry well into the future. Industry must do its part to ensure that career opportunities provided to those with training in math, science and engineering are as stable and financially rewarding as other jobs, such as medicine, law and finance.

We clearly have a long way to go. High school test scores in math have barely budged since the early 1970s. And less than half of high school graduates in 2005 were ready for college-level math and science coursework, according to ACT.

In 1983, the landmark *A Nation at Risk* report recommended that high school students be required to take a minimum of three years of math and three years of science to graduate. Yet today, only 22 states and the District of Columbia require at least this amount to graduate in the class of 2006. Even fewer require high school exit exams (which are often administered in 10th or 11th grade, leading many employers and universities to discount the results). Just one state—Alabama—calls for current students to take four years of both science and math to graduate. A major part of the answer is teacher training. When we compare the U.S. education system with that of the top performing countries, we find several significant differences, most notably that a much lower proportion of U.S. math and science teachers actually have a degree in the area in

which they are teaching. Because our elementary schools employ generalist teachers who are required to teach all academic subjects, most have degrees in education and have completed little or no coursework in math or science. Three out of four fourth-grade math and science teachers in the U.S. do not have a specialization in those subjects. And students from low-income communities are far less likely than their more affluent peers to have teachers certified in the subject they teach. With two-thirds of our math and science teachers expected to retire by 2010, we have a challenge to produce new teachers to fill that gap, but we also have an opportunity to change the way in which new teachers are trained so that future teachers will have greater content knowledge in math and science.

Strengthening math and science standards is an economic imperative, for the nation and for individual citizens. According to Department statistics, students who take advanced math courses in high school (such as trigonometry, precalculus and calculus) are far more likely to earn a bachelor's degree. Additionally, students from low-income families who acquire strong math skills by the eighth grade are 10 times more likely to finish college than peers of the same socioeconomic background who do not.

Still, old attitudes about math die hard. A recent survey commissioned by the Raytheon Company found that 84 percent of middle school students would rather clean their rooms, take out the garbage or go to the dentist than do their math homework. According to the Business Roundtable, just 5 percent of parents say they would "try to persuade their child toward careers in science, technology, mathematics or engineering." Many people still view math and science as "nerdy" subjects with little relevance to the "real world." Like it or not, that world has changed forever.

## **THE ANSWER: AMERICAN COMPETITIVENESS INITIATIVE**

President Bush's *American Competitiveness Initiative* seeks to improve learning and instruction in mathematics and science. The Department of Education's proposals within this Initiative are as follows:

- *National Math Panel*: Based on the influential National Reading Panel, the National Math Panel would convene experts to empirically evaluate the effectiveness of various approaches to teaching math, creating a research base to improve instructional methods for teachers. It would lay the groundwork for the Math Now program for grades K-7 to prepare every student to take and pass algebra;
- *Math Now for Elementary School Students*: Like the successful and popular *Reading First* program, Math Now for Elementary School Students would promote promising, research-based practices in mathematics instruction and prepare students for more rigorous math coursework in middle and high school;
- *Math Now for Middle School Students*: Similar to the current *Striving Readers Initiative*, Math Now for Middle School Students would diagnose students' deficiencies in math proficiency and provide intensive and systematic instruction to enable them to take and pass algebra;
- *Advanced Placement-International Baccalaureate (AP-IB) Incentive Program*: The AP-IB Incentive Program would train 70,000 additional teachers to lead AP-IB math and science courses. It would increase the number of students taking AP-IB tests to 1.5

million over the next five years with the goal of tripling the number of passing test-takers to approximately 700,000;

- *Adjunct Teacher Corps:* The Adjunct Teacher Corps would provide funding to match contributions from States and the private sector to train 30,000 qualified math and science professionals to become adjunct high school teachers by 2015; and
- *Evaluating the Effectiveness of Federal Science, Technology, Engineering and Math (STEM) programs:* An administration-wide effort would be undertaken to determine which federal education programs are most effective in raising achievement in math and science, which deserve more funding and which should be consolidated to save taxpayer money. The initiative would also align these education programs with the goals and aims of the *No Child Left Behind Act*. According to the Government Accountability Office, thirteen agencies reported spending \$2.8 billion on 207 education programs in FY 2004. About half of the programs dedicated to math and science received less than \$1 million in funding, with most targeted to post-secondary education.
- *Including Science Assessments in NCLB:* NCLB requires every State to develop and administer science assessments once in each of three grade spans by the 2007-08 school year, and including these assessments in the accountability system will ensure students are learning the necessary content and skills to be successful in the 21<sup>st</sup> century workforce.

## **OTHER MATH AND SCIENCE INITIATIVES**

- *Academic Competitiveness grants and SMART Grant Program:* This higher education grant program was a key component of the Higher Education Reconciliation Act. I know that Members of this Committee, particularly Chairman Enzi and Senator Frist, worked very hard to get this important program into the legislation that was just signed by the President.
- This program will build on the success of the Pell Grant program and benefit more than 500,000 students in need.
  - Academic Competitiveness grants will provide increased funds for low-income students who take a rigorous academic curriculum in high school. Grants in the amount of \$750 will be awarded to qualified first-year college students who completed a rigorous high school program; grants in the amount of \$1,300 will be awarded to second-year students who completed a rigorous program and who maintain a 3.0 average in college.
  - SMART grants will go to college juniors and seniors studying math, science or critical-need foreign languages who also maintain a 3.0 GPA. This will encourage more students to go into fields that improve America's security and competitiveness.
- *Mathematics and Science Partnerships:* This program supports the American Competitiveness Initiative by providing state formula grants to help improve students' academic achievement in rigorous math and science courses. It also assists teachers by integrating proven, research-based teaching methods into the curricula.

- *Expanded Teacher Loan Forgiveness*: This popular program offers up to \$17,500 (up from \$5,000) in loan forgiveness for highly qualified math, science and special education teachers serving challenging, low-income schools and communities.

## **THE CHALLENGE: ACCELERATING OUR SCHOOLS' PROGRESS**

Innovating and improving America's schools will not occur overnight. It took time for eight other developed nations to surpass America's high school graduation rate among adults aged 25 to 34; and it will take time for the U.S. to regain its leadership. We must start by accelerating our progress.

A comprehensive problem demands a comprehensive solution, extending from kindergarten through high school graduation. The good news is that educators and policymakers are learning more and more about what works. A half-century ago, the U.S. turned the threat of Soviet competition into proof of our ability to improve our schools and quality of life. Just four years ago, the U.S. turned a growing achievement gap into the bipartisan *No Child Left Behind Act*.

The law set a course for proficiency for all students in the core subjects of reading and math by the year 2014. Students in grades 3 through 8 are now learning under high standards. Teachers are using proven instructional methods in reading. Schools are being held accountable for results. Parents have more information and choices. And states have more flexibility to spend federal K-12 education resources, which have increased by 41 percent since 2001.

The early results are in. Across the country, academic achievement has risen significantly in the earliest grades, with math scores at all-time highs, including among African American and Hispanic students. In the last two years, the number of fourth-graders who learned their fundamental math skills increased by 127,000 according to Department data. Long-term trends show that more reading progress was made among 9-year-olds over the last five years than in the previous 28 years combined. Meanwhile, according to the Nation's Report Card, the achievement gaps in reading and math between white and African American nine-year-olds and between white and Hispanic nine-year-olds are at all-time lows. Educators use terms like "amazing," "stunning" and "remarkable" to describe the progress on long-term NAEP.

*No Child Left Behind* has set the goal of every child achieving, but the states and schools themselves have done the heavy lifting to implement curriculum standards and assessment protocols that they will use to meet these standards. For the first time, all 50 states have unique accountability plans in place, with real consequences attached. The results can be seen in schools like Maryland's North Glen Elementary. In 2003, just 57 percent of North Glen's students were proficient in reading, while 46 percent were proficient in math. Those numbers have skyrocketed to 82 percent and 84 percent, respectively.

Another example is Charles L. Gideons Elementary School in Atlanta. The number of its students meeting Georgia's standards in reading has increased by 23 percentage points since 2003. For math the news is even better: a 34 percentage-point improvement during the same period. The National Math Panel will examine schools like this one that have made significant progress to determine "what worked" in improving mathematics education and performance. If we better understand what worked at these model schools, we can then use programs like the new Math Now program to disseminate these principles and practices to teachers across the country.

A districtwide success occurred in Garden Grove, California. Three-fourths of the Garden Grove Unified School District's students do not speak English. Nearly 60 percent are from low-income families. Nevertheless, all but two of the district's 67 schools met or exceeded their Adequate Yearly Progress goals under the law.

The *No Child Left Behind Act* was designed to improve achievement. But it has also shown us what is achievable as a nation. Educators, administrators and public officials are working together, united behind a worthy goal. Now it's time to apply the Act's successful principles to our nation's high schools.

There is not a moment to waste. Governors and business leaders are united in calling for urgent reform. Every year approximately one million students drop out of high school, costing the nation more than \$260 billion dollars in lost wages, taxes and productivity over the students' lifetimes. A high school graduate can expect to earn about \$275,000 more over the course of his or her lifetime than a student who doesn't finish high school; a college graduate with a bachelor's degree can expect to earn about \$1 million more. Dropouts are also three-and-a-half times more likely to be arrested, according to reports. A key goal of the President's High School Reform Initiative is to address the academic needs of at-risk students so that they stay in school, improving their quality of life and that of their fellow Americans.

### **THE ANSWER: THE PRESIDENT'S HIGH SCHOOL REFORM INITIATIVE**

The President's High School Reform Initiative would hold high schools accountable for providing high-quality education to all students. And it would help educators implement strategies to meet the needs of at-risk high school students. The proposed program would make formula grants to states to support:

- The development, implementation and evaluation of targeted interventions designed to improve the academic performance of students most at risk of failing to meet state academic standards; and
- Expanded high school assessments that would assist educators in increasing accountability and meeting the needs of at-risk students.

Interventions would be designed to increase the achievement of high school students; eliminate achievement gaps between students from different ethnic and racial groups and income levels; and help ensure that students graduate with the education, skills and knowledge necessary to succeed in post-secondary education and in the technology-based global economy.

A key strategy would be the development of individual performance plans for students entering high school, using eighth-grade assessment data in consultation with parents, teachers and counselors. Specific interventions could include programs that combine rigorous academic courses with vocational and technical training, research-based dropout prevention activities, and the use of technology-based assessment systems to closely monitor student progress. In addition, programs that identify at-risk middle school students for assistance would help prepare them to succeed in high school and enter postsecondary education. This includes college preparation and awareness activities for students from low-income families.

The President's proposal also would require states to develop and implement reading and mathematics assessments in two additional grade levels in high school, building on the current *NCLB* requirement for testing once in grades 10-12. The new assessments would inform strategies to strengthen school accountability and meet the needs of at-risk students.

#### **ADDITIONAL SUPPORT:**

- *Striving Readers*: First funded in 2005, this program would be expanded significantly to reach more secondary students reading below grade level, which puts them at risk of dropping out. Students would benefit from research-based interventions coupled with rigorous evaluations. Schools would benefit from activities and programs designed to improve the overall quality of literacy instruction across the entire curriculum.

#### **THE CHALLENGE: PROMOTING FREEDOM AND UNDERSTANDING**

America faces a severe shortage of people who speak languages that are critical to its national security and global competitiveness:

- According to the Center for Applied Linguistics, less than one-fourth of public elementary schools report teaching foreign languages, even though a child's early years are the best years in which to learn a new language.
- Less than 1 percent of American high school students study Arabic, Chinese, Farsi, Japanese, Korean, Russian or Urdu—combined.
- Less than 8 percent of undergraduates in American universities take foreign language courses, and less than 2 percent study abroad in any given year.

While only 44 percent of U.S. high school students were studying a foreign language in 2002, learning a second or even a third foreign language is compulsory for students in the European Union, China, Thailand and elsewhere.

More than 200 million children in China study English. By comparison, only about 24,000 elementary and secondary school children in the U.S. study Chinese. Many students in other nations begin learning another language before they're even 10 years old. They will have an edge over monolingual Americans and others in developing new relationships and business connections in countries other than their own.

#### **THE ANSWER: THE PRESIDENT'S NATIONAL SECURITY LANGUAGE INITIATIVE**

Critical-need foreign language skills are necessary to advance the twin goals of national security and global competitiveness. Together with the Department of State, Department of Defense and the Director of National Intelligence, the Department of Education proposes to offer grants and training for teachers under President Bush's National Security Language Initiative.

The Initiative would increase the number of Americans who speak and teach foreign languages, with an emphasis on critical-need languages. It will strengthen and refocus the Foreign Language Assistance Program, and will initially enable 24 school districts across the country to

create partnerships with colleges and universities to develop critical-need language programs. Among the critical-need languages targeted under the initiative are Arabic, Chinese, Korean, Japanese, and Russian, as well as languages in the Indic, Iranian and Turkic families.

The National Security Language Initiative will also provide funding to create a Language Teacher Corps, with the goal of having 1,000 new critical foreign language teachers in U.S. schools by the end of the decade. And it will enable the creation of an “e-Learning Language Clearinghouse” and expanded Teacher-to-Teacher seminars to assist foreign language teachers anytime, anywhere.

## **CONCLUSION:**

Our schools helped make the 20th century the “American Century.” The 21st century remains to be claimed. But Americans have never backed down from a challenge. This changing world offers another opportunity for Americans to shine, and the President’s American Competitiveness Initiative and the rest of his education agenda will help set the course.

America’s schools have made great progress in improving academic achievement in the early grades. But like athletes or musicians, children of all ages must work hard each and every day if they wish to compete, perform and succeed, and their schools must show them the way. The President’s education agenda will help prepare the students of today to become the successful leaders—the pioneers, discoverers and Nobel Prize winners—of the next American Century. I look forward to working with Congress on implementing these bold initiatives.

Thank you for the opportunity to testify this morning. I am happy to answer any questions you have.