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****MASSACHUSETTS FACT SHEETS INCLUDED ****

**KENNEDY INTRODUCES BIPARTISAN BILL TO GET AMERICA BACK ON TRACK
AND GLOBALLY COMPETITIVE**

WORKS TO MOVE OUR ECONOMY FORWARD AND INVEST IN OUR FUTURE

Washington, DC: Today, Senator Edward Kennedy, joined by a bipartisan group of 13 Senators, introduced the National Competitiveness Investment Act, to encourage innovation in America as a way to create jobs and move our economy forward. Kennedy believes the bill is an important down-payment on the commitment and sustained investment needed to keep America competitive in the years to come. Among other things, the bill doubles basic research funding by the National Science Foundation over the next five years and puts us on a strong course to doubling basic research funding at the Department of Energy as well. The National Competitiveness Investment Act also recognizes and responds to the critical need to recruit and train high quality math, science, technology and engineering teachers to teach in the schools with the greatest need so that we can begin to close the achievement gap and ensure that all American students can compete on a level playing field with their peers in other nations.

“America has long been at the forefront in innovation, invention, and education. We know how to rise to challenges and come out ahead. We’ve done it before and we can do it again.” Senator Kennedy said. “Today we are taking a step toward putting America back on the right track, but we need a bold commitment to help the current generation meet and master the global challenges of today and tomorrow. I look forward to working with my colleagues as the bill moves forward to ensure that Congress provides the new investments needed to fully support and build on these important proposals.”

Senator Kennedy is committed to doing more to get this country back on track. He will continue to move forward to ensure that the cost of college is not a barrier to full participation in the new economy. He also is committed to addressing the impact of the global economy on the American worker.

Below is Senator Kennedy’s full statement upon introduction, a summary of the bill and fact sheets on education and research and development, both nationally and in Massachusetts.

**Statement of Senator Edward M. Kennedy
Introduction of the National Competitiveness Investment Act
September 26, 2006**

Families across America are facing serious challenges in today's global economy. The value of their wages is declining, the cost of living is going up, and many of their jobs are being shipped overseas.

We must respond to this challenge to ensure that our citizens can achieve the American dream once again. We have the best workers in the world, and we must prepare them to compete and succeed in the global economy.

America has long been at the forefront in innovation, invention, and education. But other countries are catching up and surpassing us.

We are now ranked 28th out of 40 nations in math education.

Since 1975, we have dropped from 3rd to 15th in the world in producing scientists and engineers.

A recent report shows that high school and college graduation rates in the United States have dropped below the average for other developed countries.

Federal investment in research and development has been shrinking as a share of the economy, and government research programs at the National Institutes of Health, the National Science Foundation and the Department of Energy all have less funding this year than they did three years ago.

At the same time, fast-growing countries like China, Ireland and South Korea are realizing the potential for economic growth that comes with investing in innovation. For example, China's total research and development investments rose from \$12.4 billion in 1991 to \$84.6 billion in 2003, an average increase of 17 percent a year. Over the same period, the increase in U.S. investment averaged only 4 to 5 percent annually.

Study after study tells us that we need major new investments in education and research and development to stay ahead. We cannot just tinker at the margins and expect to master our own destiny in the global economy. We have a responsibility to make the investments that are necessary to our progress – a responsibility to our families, to our economy, to our nation, and to our national security.

Last year, the Council on Competitiveness urged a focus on lifelong skill development – through elementary, secondary and higher education, and workforce training and support, as essential to keeping America on the cutting edge of innovation.

The recent report by the National Academy of Sciences, "Rising Above the Gathering Storm," emphasized these recommendations. Two of the report's four major recommendations involved education as the solution to meeting the global challenge. The report set out a broad roadmap for keeping America competitive, but it prioritized investment in education over all other recommendations.

The National Association of Manufacturers also issued a report urging renewed focus on education and training to keep American businesses competitive.

It is clear that we must act, and today we are taking a step toward putting America back on the right track.

I am pleased to join with a bipartisan group of my colleagues today to introduce the National Competitiveness Investment Act. It is a modest proposal, but it represents an important down-payment on the commitment and sustained investment needed to keep America competitive in the

years to come.

The legislation responds to many of the recommendations in the “Gathering Storm” and other recent reports and includes many provisions based on those in the Right TRACK Act, which I introduced earlier this year.

The bill takes important steps to encourage innovation in America as a way to create jobs and move our economy forward. It is often federally funded research that primes the pump for technological, medical and scientific breakthroughs, and the bill doubles basic research funding by the National Science Foundation over the next five years. It also puts us on a strong course to doubling basic research funding at the Department of Energy as well.

The legislation also creates a President’s Council on Innovation and Competitiveness, based on successful models being used in established and emerging economies in Europe and Asia. The council will bring together the heads of federal agencies with leaders in business and academia to develop a comprehensive agenda to promote innovation. Japan for some time has had a similar council, and Ireland, known as the Celtic Tiger, has already had success in expanding its R&D strength since it established its council last year.

The bill also strengthens programs at college and universities to encourage a renewed interest in nuclear science. Massachusetts has long been a leader in nuclear research. There are only three dozen licensed nuclear reactors in the United States, and three of them are located at Massachusetts universities – University of Massachusetts Lowell, Worcester Polytechnic Institute and MIT. These colleges will have a vital role as nuclear science expands, and this bill will help expand their programs and establish new ones to meet the growing demand.

These are important investments, but there is more we can do. We should act to renew the research and development tax credit as soon as possible. The incentive provided by the tax credit has led to quality jobs, better, safer products, greater productivity and a stronger, more robust national economy. A growing number of countries who recognize the importance of research and development spending to future economic growth now offer more generous R&D tax incentives than the United States. The top 6 pharmaceutical companies, and American high tech companies like Microsoft, Intel and GE have all opened advanced R&D facilities in India. We must give American companies the certainty that these incentives will continue to be there, so that they can choose to maintain these high-skilled jobs here at home, to keep America at the cutting edge as a leader in innovation in the global economy.

These investments also depend on a talented pool of well-trained individuals who can make discoveries and scientific breakthroughs. Jobs in science and engineering are expected to increase 70% faster than those in other fields over the next 6 years. To ensure Americans are prepared to hold these jobs, we must improve education at all levels – from the very early years in a child’s life all the way through doctoral study and beyond – especially in math, science, engineering and technology.

Although international comparisons of student achievement show that the United States is slipping behind other countries, a closer look shows that the picture is more complex. The real problem lies in the serious and pervasive achievement gap in this country between higher income students and lower income students.

On the most recent test comparing student achievement in industrialized nations, white students in the United States performed better than the average for all countries in both math literacy and problem solving, while their Hispanic and African American peers did worse. Low-income students in the U.S. performed worse than their high-income peers, and also performed worse than other low-income students in over half of the developed countries surveyed.

If we close this achievement gap, and guarantee all children in this country a world-class education, we can put America back at the top of the list. To do so, we should fully fund the No Child Left Behind Act.

We must also invest in teachers. The National Competitiveness Investment Act recognizes and responds to the critical need to recruit and train high quality math, science, technology and engineering teachers to teach in the schools with the greatest need so that we can begin to close the achievement gap and ensure that *all* American students can compete on a level playing field with their peers in other nations.

Research shows that having a high quality teacher is one of the most important factors in a child's success in school. But almost half of math classes taught in high poverty and high minority schools are taught by teachers without a college major or minor in math or a related field, such as math education, physics or engineering. The problem is even more serious in middle schools - 70% of math classes in these schools are taught by a teacher who doesn't even have a minor in math or a related field.

The bill provides a 10-fold increase in the Robert Noyce Teacher Scholarship program at the National Science Foundation to recruit math, science, engineering and technology students and professionals to become teachers in high need school districts.

It provides grants to institutions of higher education to create undergraduate programs that integrate the study of math, science, engineering, or critical need foreign language with teacher education, modeled on the successful U-Teach program at the University of Texas. It also helps institutions create part-time master's degree programs to improve the content knowledge and teaching skills of current teachers. In both of these programs, universities would partner with high-need school districts to ensure that these resources will go where they are needed most.

The bill expands the Teacher Institutes for the 21st Century program at the National Science Foundation to provide cutting-edge summer professional development programs for teachers who teach in high-need schools. It also creates a summer institute program in the Department of Energy to strengthen the math and science teaching skills of elementary and secondary school teachers.

Recruitment and training are the first steps, but we must also do more to see that teachers have an incentive to stay in classrooms once they are there. We should provide financial incentives – through fellowships or salary increases – to teachers who commit to teach in the highest need schools, where the unique challenges make the schools the hardest to staff. I look forward to working with my colleagues as the bill moves forward to add this critical component to the effort.

In addition to providing a high quality teacher in every classroom, we must also ensure that children in low income school districts have access to the same college preparatory classes that more affluent school districts are able to provide – and, importantly, that they have the preparation they need to succeed in those classes. To do so, the bill expands access to Advanced Placement and International Baccalaureate classes as well as pre-AP and pre-IB courses, especially in high need schools, and creates a program to improve instruction in math for elementary and middle school students and provide targeted help to students struggling with the subject.

The bill also addresses the critical need to ensure our education system is preparing students for the challenges they face after graduation from high school. According to a recent study, the nation loses over \$3.7 billion a year in the cost of remedial education and lost earning potential because students are not adequately prepared to enter college when they leave high school.

Many states have recognized the need to better align elementary and secondary school standards, curricula, and assessments with the demands of college, the 21st century workforce and the Armed Forces. This bill provides grants to assist states in those efforts. The grants would support state PreK-16 councils that bring together stakeholders from all levels of the education community, from the business sector, and from the military to improve the rigor of elementary and secondary education and prepare students for the postsecondary challenges they will face.

In addition to the education programs at the Department of Education and the National Science Foundation, the legislation relies on the resources of the Department of Energy to assist in the effort to improve math and science education. The National Labs at the Department of Energy can have a critical role in these efforts, and so can the more than 300 colleges and universities across the country conducting research supported by the Department of Energy. I appreciate my colleagues' efforts to ensure that the resources of the Department of Energy are used to enhance educational opportunities for children not only in the states that host National Labs, but across the country.

It is also becoming increasingly important for students to become exposed to and immersed in critical foreign languages and cultures. In recent years, foreign language needs have significantly increased throughout the public and private sector due to the presence of a wider range of security threats, the emergence of new nation states, and the globalization of the U.S. economy. American businesses increasingly need employees experienced in foreign languages and international cultures to manage a culturally diverse workforce. But if students are to become proficient in these critical foreign languages, they must have access to a sustained course of study, beginning in the early grades.

To address these needs, the bill provides grants to enable institutions of higher education and local educational agencies working in partnership to create programs of study in critical foreign languages for students from elementary school through postsecondary education.

All of these programs and investments will help prepare our students to compete in the 21st century, but if we are serious about keeping America competitive, there is more we can – and must – do.

A college degree is fast becoming the price of admission to participation in the global economy. Eighty percent of the fastest growing jobs in this country will require some postsecondary education. A recent study by the Organisation for Economic Co-operation and Development shows that in the United States, earnings of people with a post-secondary degree are 72% higher on average than for those with only a high school diploma.

But with soaring costs and stagnant financial aid, college is increasingly out of reach for students and families. Research shows that 400,000 students a year do not go to a four year college because they cannot afford it.

When our troops returned home from World War II, we created the GI Bill and sent them to college to learn the skills they would need in the changing world. The economy reaped an estimated \$7 in benefit for every dollar invested in that effort.

In recent decades however, federal grant aid has dwindled and the grants provided don't go as far as they used to. Thirty years ago, seventy-seven percent of the federal assistance provided to students was in the form of grants, but in recent years it's twenty percent. The Pell Grant now covers less than 35% of the cost of attending college.

To ensure the prosperity of our families and the nation, we must open the doors of college to all by restoring the Pell Grant as the foundation of the student aid system.

Earlier this year, Congress squandered an opportunity to significantly increase aid for low income

students. The Senate passed a bill that would have immediately increased the Pell grant from \$4,050 to \$4,500. But this increase was rejected, and the funds instead were used to pay for tax giveaways for the wealthiest Americans.

I know many of my colleagues agree that higher education is the key to keeping America competitive, and I look forward to working with them to ensure that the cost of college is not a barrier to full participation in the new economy.

We must also do more to address the devastating impacts of the global economy on American workers and their families.

American workers are facing global competition that is fundamentally unfair, but this bill does nothing to level the playing field or to help ease the burden of their transition to the global economy. To truly improve our national competitiveness, we must address all aspects of this challenge. We cannot continue to ignore the plight of working Americans.

First, we need to level the playing field in the competition for good jobs. Americans have nothing to fear from competition that's fair. But it's not fair when Americans are competing with foreign workers who lack even basic labor standards, like child labor laws, a minimum wage, or the right to organize. And it's not fair when companies cut costs by exploiting and abusing foreign workers.

We need to exercise global leadership in promoting fair wages and safe working conditions for workers around the world, reward companies that treat their foreign workforces fairly, and be a strong voice in sanctioning those countries that will not play by the rules.

Beyond these basic steps to level the playing field, we owe a particular duty to those American workers who are losing their jobs because of trade. We all benefit from the lower prices and variety of products that globalization provides, but many of our most vulnerable workers are paying the price.

In the manufacturing sector alone, we've lost nearly 3 million manufacturing jobs since 2001, and service sector jobs are now moving overseas as well. These are good, middle-class jobs, with decent wages and benefits that form the core of the American middle class.

Our response to globalization must address the disappearance of good jobs. We must create the good jobs of the future. We must eliminate tax incentives for companies to ship jobs overseas. We must give workers who are at risk of losing their jobs to overseas competition fair warning so that they can plan for their futures. We must strengthen our commitment to help workers who lose their jobs adjust to the new economy, with well-funded training and income assistance programs that ease the transition to new employment.

Fulfilling our commitment to American workers also demands that we give them their fair share of the economic growth that globalization brings. We must raise the minimum wage to \$7.25 an hour, and give workers a stronger voice in the new economy by protecting their right to organize and form a union.

If we truly want to be competitive in the global economy, we need to address these challenges facing the American workforce head on, and give workers greater job security in the present, and better opportunities in the future. I hope that the same bipartisan coalition that has worked together so effectively on this bill can also work together to address these important issues for America's working families.

The legislation we are introducing today is not a complete package. It represents only the beginning of a strong commitment that we will need to build on and sustain if America is to remain competitive in the years ahead. I am proud that the bill has strong bipartisan support, and that support is critical to

ensuring these proposals become a reality.

In 2001, there was strong bipartisan support to significantly increase funding to improve our schools through the No Child Left Behind Act. But President Bush's budget this year would mean a cumulative shortfall of \$56 billion in funding since that bill was enacted, and this year he proposed *cutting* education funding by \$2 billion.

In 2002, we promised to double NSF funding, but last year's appropriation was only two-thirds the level we agreed to four years ago – nearly \$3 billion short of staying on track to that goal.

Words alone will not keep America competitive. This legislation must be more than a promise. I look forward to working with my colleagues as the bill moves forward to ensure that Congress provides the new investments needed to fully support these important proposals.

Americans know how to rise to challenges and come out ahead. We've done it before and we can do it again. When we were called into action in 1957 with the Soviet Sputnik launch, we rose to the challenge by passing the National Defense Education Act and inspiring the nation to ensure that the first footprint on the moon was by an American. We doubled the federal investment in education.

We need the same bold commitment to help the current generation meet and master the global challenges of today and tomorrow. The National Competitiveness Investment Act will start to put America back on track. I look forward to working with my colleagues to improve upon the bill as it moves forward and to expand on these efforts in the months to come.

SUMMARY OF THE "NATIONAL COMPETITIVENESS INVESTMENT ACT"

The National Competitiveness Investment Act is a bipartisan legislative response to recommendations contained in the National Academies' "Rising Above the Gathering Storm" report and the Council on Competitiveness' "Innovate America" report.

Several sections of the bill are derived from proposals contained in the "American Innovation and Competitiveness Act of 2006" (S.2802), approved by the Senate Commerce Committee 21-0, and the "Protecting America's Competitive Edge Through Energy Act of 2006" (S.2197) approved unanimously by the Senate Energy Committee.

Accordingly, the National Competitiveness Investment Act focuses on three primary areas of importance to maintaining and improving United States' innovation in the 21st Century: (1) increasing research investment, (2) strengthening educational opportunities in science, technology, engineering, and mathematics from elementary through graduate school, and (3) developing an innovation infrastructure. More specifically, the National Competitiveness Investment Act would:

Increase Research Investment by:

- Doubling funding for the National Science Foundation (NSF) from approximately \$5.6 billion in Fiscal Year 2006 to \$11.2 billion in Fiscal Year 2011.
- Setting the Department of Energy's Office of Science on track to double in funding over ten years, increasing from \$3.6 billion in Fiscal Year 2006 to over \$5.2 billion in Fiscal Year 2011.
- Establishing the Innovation Acceleration Research Program to direct federal agencies funding research in science and technology to set as a goal dedicating approximately 8% of

their Research and Development (R&D) budgets toward high-risk frontier research.

- Authorizing the National Institute of Standards and Technology (NIST) from approximately \$640 million in Fiscal Year 2007 to approximately \$937 million in Fiscal Year 2011 and requiring NIST to set aside no less than 8 percent of its annual funding for high-risk, high-reward innovation acceleration research.
- Directing NASA to increase funding for basic research and fully participate in interagency activities to foster competitiveness and innovation, using the full extent of existing budget authority.
- Coordinating ocean and atmospheric research and education at the National Oceanic and Atmospheric Administration and other agencies to promote U.S. leadership in these important fields.

Strengthen Educational Opportunities in Science, Technology, Engineering, Mathematics, and Critical Foreign Languages by:

- Authorizing competitive grants to States to promote better alignment of elementary and secondary education with the knowledge and skills needed for success in postsecondary education, the 21st century workforce, and the Armed Forces, and grants to support the establishment or improvement of statewide P-16 education longitudinal data systems.
- Strengthening the skills of thousands of math and science teachers by establishing training and education programs at summer institutes hosted at the National Laboratories and by increasing support for the Teacher Institutes for the 21st Century program at NSF.
- Expanding the Robert Noyce Teacher Scholarship Program at NSF to recruit and train individuals to become math and science teachers in high- need local educational agencies.
- Assisting States in establishing or expanding statewide specialty schools in math and science that students from across the state would be eligible to attend and providing expert assistance in teaching from National Laboratories' staff at those schools.
- Facilitating the expansion of Advanced Placement (AP) and International Baccalaureate (IB) programs by increasing the number of teachers prepared to teach AP/IB and pre-AP/IB math, science, and foreign language courses in high need schools, thereby increasing the number of courses available and students who take and pass AP and IB exams.
- Developing and implementing programs for bachelor's degrees in math, science, engineering, and critical foreign languages with concurrent teaching credentials and part-time master's in education programs for math, science, and critical foreign language teachers to enhance both content knowledge and teaching skills.
- Creating partnerships between National Laboratories and local high-need high schools to establish centers of excellence in math and science education.
- Expanding existing NSF graduate research fellowship and traineeship programs, requiring NSF to work with institutions of higher education to facilitate the development of professional science master's degree programs, and expanding NSF's science, mathematics, engineering and technology talent program.

- Providing Math Now grants to improve math instruction in the elementary and middle grades and provide targeted help to struggling students so that all students can master grade-level mathematics standards.
- Expanding programs to increase the number of students from elementary school through postsecondary education who study critical foreign languages and become proficient.

Develop an Innovation Infrastructure by:

- Establishing a President's Council on Innovation and Competitiveness to develop a comprehensive agenda to promote innovation and competitiveness in the public and private sectors.
- Requiring the National Academy of Sciences to conduct a study to identify forms of risk that create barriers to innovation.

The New National Competitiveness Investment Act
Massachusetts Fact Sheet
Senator Edward M. Kennedy

EDUCATION

- According to the 2005 National Assessment on Educational Progress (NAEP) 49% of 4th graders and 43% of 8th graders scored at or above the proficient level in mathematics and 9% of 4th graders and 20% of 8th graders were below basic. [National Assessment on Educational Progress]
- Massachusetts fourth and eighth graders are tied for first in the nation in mathematics (with Minnesota, New Hampshire and Kansas), and score second highest in the nation in science. [National Assessment on Educational Progress]
- Spring 2006, 84% of Massachusetts tenth graders passed the Massachusetts Comprehensive Assessment exam, up from 81% in 2005. [MA Dept. of Education]
- Comparing the 2006 and 2005 Massachusetts Comprehensive Assessment Systems (MCAS), the performance gap between Grade 10 white and African-American students performing at the Proficient or Advanced levels narrowed by 6 points in math. The performance gap between Grade 10 white and Hispanic students narrowed by two points in math. [National Center for Educational Statistics]

- Many Massachusetts schools are leaving our Limited English Proficient, Low-Income and Minority Students behind in math. Limited English Proficient students made AYP in 38 percent of schools in math. The percentage of schools where Low-Income students and African-Americans made AYP was also low at 45 percent and 40 percent, respectively. In contrast, Whites students made AYP in 87 percent of schools in math. [National Center for Educational Statistics]
- Roughly 1,600 out of 5,700 high-school math teachers (28%) are not math-certified. [Massachusetts Insight Education and Research Institute]
- University of Massachusetts Boston was recently awarded a \$500,000 NSF grant as part of the Robert Noyce Scholarship Program to increase the number of underrepresented qualified science, technology, engineering, and mathematics graduates who are also qualified to teach. [UMASS Boston]

Foreign Language:

- In Massachusetts, 33% of students in grades 7-12 are enrolled in a foreign language. [Asian Society]
- The Massachusetts Initiative for International Studies (MIIS) was formed “to make international studies an essential part of K-12 education.” Legislation was passed in 2005 establishing an international education advisory committee and making the third week in November international education week. [Asian Society]
- Milton Academy is noted for its fourth-grade program, in which much of the school year is devoted to the study of the Middle East in terms of history, literature, mathematics, writing, and the visual and performing arts. [Education Leaders for a Global Society Report]

RESEARCH AND DEVELOPMENT

- Massachusetts ranked 5th overall in federal dollars in 2000 -- \$4.2 billion federal dollars were spent in Massachusetts [Source: ASTRA 2003]
- In 2003, Massachusetts Colleges and Universities alone spent \$1.8 billion on research and development. [Source: National Science Foundation]

- R&D funding makes up 19% of total federal dollars spent in Massachusetts. [Source: ASTRA 2003]
- The Department of Defense is the largest federal source of R&D funding in Massachusetts, accounting for 31% of total federal R&D dollars spent in the state. [Source: ASTRA 2003]
- The Department of Health and Human Services accounts for 18%, NASA 12%, the National Science Foundation 11% and the Department of Energy 10% of federal R&D dollars in the state. [Source: ASTRA 2003]
- Massachusetts ranks 4th in the number of Ph.D. Scientists and Engineers [Source: National Science Foundation]
- For every 1,000 private sector employees in Massachusetts, 82 work for high technology firms. [Source: ASTRA 2003]
- R&D accounts for almost 5% of Massachusetts' Gross State Product [Source: National Science Foundation 2006]

The New National Competitiveness Investment Act

Research and Development Fact Sheet

Senator Edward M. Kennedy

Overall R&D Investment in the United States is stagnating and the Federal share is shrinking.

- Combined, federal and private R&D investment as a percentage of U.S. GDP has hovered at just under 3% throughout the 1990s and the beginning of this decade. [Source: OECD, Science and Technology Scorecard 2005]
- Federal investment in R&D alone is 0.8% of GDP, compared to almost 2% in 1964. [Source: National Science Foundation, 2004]
- Total U.S. R&D investment, including private sector investment is 2.66% of GDP. [Source: NSF, 2004]

Basic research funding is hurting more than applied research and development

- The Department of Defense, the National Institutes of Health, the National Science Foundation and the Department of Energy **all** receive less funding for basic research in real terms today than they received three years ago. [Source: AAAS 2006]
- In 2006, the NIH budget fell for the first time in 36 years, and the President's 2007 budget would keep its funding flat in 2007.
- Funding for basic research fell from FY1993 to FY2004 by more than 10% in real terms. [Source: National Research Council].
- Between 1980 and 2006, the Defense Department's focus on basic research dropped from 20 percent of total science and technology funds to approximately 12 percent. [Source: AAAS, Council on Competitiveness.]

Basic research continues to lose under the President's proposed 2007 budget.

- Overall, Defense R&D would increase by 2.2 percent, but basic research would fall by 3.3 percent to \$1.422 billion. The Defense Department's Science and Technology budget would be cut by 18.6%
- The National Nanotechnology Initiative – a major new area of research – would have a 2% decrease in its funding under the President's budget.
- The President's Budget would reduce funding for Biological and Environmental Research at the Department of Energy by 12%, undercutting a range of research in energy, homeland security, health and the environment.

The U.S. will face increasing international competition in R&D from emerging countries and top economic performers alike

- Although we lead the world in actual dollars spent on R&D, countries like Japan, Ireland and South Korea increasingly recognize the immense potential of basic research for economic growth and are working hard to catch up to us.
- In South Korea, R&D already accounts for a greater percent of its GDP (2.9%) than it does for the U.S. (2.7%) [Source: Global R&D Report]
- China's total R&D investments climbed from \$12.4 billion in 1991 to \$84.6 billion in 2003, increasing its investment an average of 17% per year. The U.S. annual growth for this same period ranged between 4 and 5 percent [Source: NSF]

- China's government R&D expenditures only account for 1.23% of GDP compared to 0.8% for U.S. federal R&D expenditures. [Source: NSF]
- China is now the third largest R&D spender behind the U.S. and Japan. [Source: OECD 2004]
- Between 1990 and 2000, India tripled its investment in scientific research. Last year, India increased its science and technology investment by 16 percent and the government plans to double its investment in R&D in the next decade.
- Over the last ten years, the U.S. has increased its R&D investment by only one-third. [Source: OECD]
- The U.S. now ranks 12th in the growth of patent applications – behind China, South Korea, Japan, Finland, and Australia in the top five [Source: World Intellectual Property Organization 2005]

The New National Competitiveness Investment Act

Education Fact Sheet

Senator Edward M. Kennedy

The United States Must Modernize PreK-16 Education to Better Prepare Students for 21st Century Demands and Ensure that all Children, Regardless of Income, Receive a World Class Education

- U.S. students lag far behind other countries in math and science performance. American students rank 28th out of 40 first and second world nations in math performance and problem solving. U.S. 12th graders recently performed below the international average for 21 countries on a test of general knowledge in math and science. On the advanced math assessment (pre-calculus, calculus, AP calculus) U.S. students scored below 11 countries and received scores similar to another 4 countries. [OECD Programme for International Assessment, 2003 and National Summit on Competitiveness Investing in U.S. Innovation Report, 2005]
- On the 2003 PISA, white U.S. students did better than the U.S. and the OECD average in both math literacy and problem solving, while their Hispanic and African American peers did worse. Similarly troubling, low-income students in the U.S. did worse than their high-income peers, and also did worse than other low-income students in 22 of the 39 OECD countries surveyed. [U.S. Department of Education, International Outcomes of Learning of Mathematics Literacy and Problem Solving, 2005]

- High school and college graduation rates in the US have now dropped below the average for OECD countries. If these trends continue, in 10 years the US's share of the pool of highly qualified people coming from OECD countries would drop from 41% to 36%. [OECD, Education at a Glance, 2006]
- According to the 2005 National Assessment on Educational Progress (NAEP) 35 % of 4th graders and 29% of 8th graders scored at or above the proficient level in mathematics and 21% of 4th graders and 32% of 8th graders were below basic.
- In science, 27% of 4th graders, 27% of 8th graders and 18% of 12th graders scored proficient or above and 34% of 4th graders, 43 % of 8th graders and 46% of 12th graders scored below basic on the 2005 NAEP science assessment.
- One in three 8th graders attend a school that does not offer an algebra class – widely considered a “gatekeeper” course for more advanced science and math courses. [National Science Board]
- Math and Science student achievement for students age 17 has been stagnant for over 30 years. [National Assessment of Educational Progress]
- Students are graduating high school unprepared to succeed in college or the workplace. In 2000, 28% of college freshmen enrolled in a remedial education course. [NSF 2006 Indicators] 60% of employers said a high school diploma did not adequately prepare a typical student with even basic skills to qualify for an entry-level job. [National Association of Manufacturers 2005 Skills Gap Report]

A High Quality Teacher is the Most Important Factor in Student Achievement

- The Center for the Study of Teaching and Policy reported that the most consistent and powerful predictor of student achievement in science and mathematics was the presence of teachers who were fully certified and had at least a bachelor's degree in the subjects taught. [National Academies of Science]
- Low salaries and insufficient support make it extremely difficult to recruit and retain highly-qualified teachers. Teachers are paid on average almost \$8,000 less than graduates in other fields, and the gap widens to more than \$23,000 after 15 years of teaching. More than 20% of new teachers leave during their first three years, and almost half of teachers in urban districts leave during the first five years. [AFT and NEA]
- According to NCES, 20% of teachers in high-poverty schools have three or less years of teaching experience, compared to 11% of teachers in low-poverty schools. [Qualified Teachers for At-Risk Schools: A National Imperative]
- Other industrialized countries are doing much better in ensuring students have access to highly qualified teachers. In 1999, only 41% of US 8th grade students received instruction from a math teacher who specialized in mathematics, while the international average was 71%. [NAS Rising Above the Gathering Storm]
- Despite the strong evidence that shows how important quality math and science teachers are, a crisis remains in the workforce. In 2002, 20% of math teachers and between 17% and 28% (depending on the field) of science teachers lacked certification in their fields. This crisis was especially acute in middle school. [Ed Trust]
- Students in high-minority and high-poverty schools are at an even greater disadvantage: Almost half of math classes taught in high poverty and high minority high schools are taught by teachers who

don't have a college major or minor in math or a related field, such as math education, physics or engineering. It's even worse in middle school: 70% of math classes in high poverty and high minority middle schools are taught by a teacher who doesn't even have a minor in math or a related field. [Education Trust, 2006]

The United States is Slipping Behind in the Production of New Scientists

- It is estimated that jobs in science and engineering will increase more quickly than those in other fields – 70% faster from now until 2012. [NSB Science and Engineering Indicators 2006 supplement, America's Pressing Challenge]
- In 1975, the United States ranked 3rd in the world in producing science and engineering professionals; by 2000, the U.S. ranked 15th. [NSB 2004 Science and Engineering Indicators]
- China graduates over 2 and a half times as many engineers and computer scientists as the United States. [Duke University]
- In 2002, one third of the world's engineering doctorates were awarded in Asia, while the U.S. produced only 15% (half of which were earned by students on temporary visas). [National Science Board, 2006]
- From 1988 to 2003, the US share of research articles published in the world's major peer-reviewed journals declined from 38% to 30%. Over this same time period, China's output rose by 530%, and their share of articles rose from 4% to 10%. US articles continue to be cited more often than others, which indicates a higher quality of research, but the US share of citations has declined since 1990. [National Science Board, 2006]

American Students and Workers Need Foreign Language Skills and Knowledge of Global Cultures

- In recent years, foreign language needs have significantly increased throughout the public and private sector due to the presence of a wider range of security threats, the emergence of new nation states, and the globalization of the U.S. economy.
- Only 1/3 of students in grades 7-12 – and a mere 5% of elementary school students – study a foreign language. Even fewer study critical need foreign languages. [Committee for Economic Development, 2006]
- A 2004 survey found that 2,400 high schools would be interested in offering the AP in Chinese language and culture, even though most of these schools do not currently offer Chinese. [Asia Society]
- In the 2003 National Survey of Student Engagement, only 40% of undergraduates reported taking foreign language coursework and only 20% reported having studied abroad. Foreign languages represented 1% percent of all undergraduate degrees conferred in the 2000-2001 school year.
- More than 200 million children in China are studying English, a compulsory subject for all Chinese primary school students. By comparison, only about 24,000 of approximately 54 million elementary and secondary school children in the United States are studying Chinese. [U.S. Department of Education]
- Arabic accounts for just 0.8% of foreign language enrollments in American postsecondary institutions. [Committee for Economic Development, 2006]

- American companies lose an estimated \$2 billion per year as a result of inadequate cross-cultural guidance for their employees in multicultural situations. [Committee for Economic Development, 2006]
- With the exception of Italy and Wales, all European students are required to learn a foreign language throughout their compulsory education. [Committee for Economic Development, 2006]

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