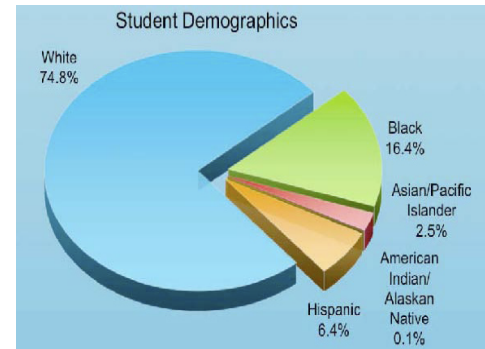


Pennsylvania's K-12 STEM ED Report Card

Developing the STEM (Science, Technology, Engineering & Mathematics) Education Pipeline:

Advances in science and engineering are essential for ensuring America's economic growth and national security. During the next decade, U.S. demand for scientists and engineers is expected to increase at four times the rate for all other occupations. But today's high school students overall are not performing well in math and science, and fewer of them are pursuing degrees in technical fields.

The Diversity Challenge: Nationwide, the U.S. Census Bureau reports that 39 percent of the population under the age of 18 is a racial or ethnic minority. Yet, in 2000, only 4.4 percent of the science and engineering jobs were held by African Americans and only 3.4 percent by Hispanics. Gender differences in STEM education are also of major concern and the subject of numerous studies.



Pennsylvania's K-12 Student Diversity
Source: U.S. Census Bureau 2007

Interest in STEM Education is Declining and Most Students are not Adequately Prepared to Succeed in College-Level Coursework: According to the **ACT Educational Planning & Assessment System (ACT EPAS)**, students most likely to major in STEM fields in college (and persist to earn their degrees) are those who develop interest in STEM careers through early career planning and take challenging classes that prepare them for college-level science and math coursework.

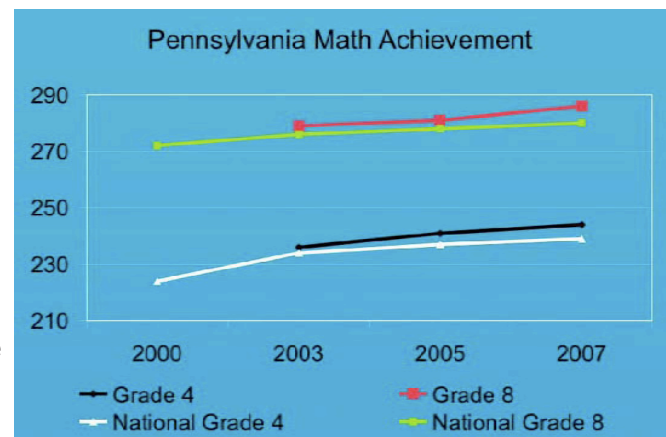
FACT: Over the past ten years, the percentage of ACT-tested students who said they were interested in majoring in engineering has dropped steadily from 7.6 percent to 4.9 percent.

FACT: Over the past five years, the percentage of ACT-tested students who said they were interested in majoring in computer and information science has dropped steadily from 4.5 percent to 2.9 percent. However, students who plan early and strategically and have access to high-level and rigorous coursework are more likely to be prepared to succeed in the STEM fields.

CONGRESS NOW HAS AN OPPORTUNITY TO HELP CLOSE THIS ALARMING GAP

Federal Investment in K-12 STEM Education Helps Keep Our Economy Competitive: Without public funds invested in K-12 science and mathematics education, there can be little or no basis for future job growth and our national security will be imperiled. Over the past 50 years, taxpayer investment in science and mathematics education has indirectly produced more than half of the nation's economic growth. Prominent economists agree that no other investment generates a greater long-term return to the economy than scientific R&D, and that starts with our educational systems.

Mapping Pennsylvania's Educational Progress 2008: Of Pennsylvania's 3,250 public schools, 2,404 (77.5%) were deemed to be "Making Adequate Yearly Progress" in 2006-07. **Data was unavailable for those schools** "in Need of Improvement" and in "Restructuring," according to the **Consolidated State Performance Reports, 2006-07** issued by the U.S. Department of Education.



Source: National Assessment of Educational Progress (NAEP) 2007



The STEM Ed Coalition is a group of more nearly 400 national, state, and local organizations concerned about STEM Education policy and funding. Please visit us at www.stemedcoalition.org For more information contact: j_brown@acs.org or jpeterson@nsta.org

K-12 STEM* ED Report Card: How Pennsylvania Compares

* STEM Ed = Science, Technology, Engineering & Mathematics Education

Significant Education, Scientific or Economic Indicator		Pennsylvania	National Average
Rank	Latest Educational Test Scores for Science & Math	or Total	
NAEP Scores (Natl. Assessment of Educational Progress) ¹			
12	2007 Grade 8 Mathematics Average Score	286	280
7	2007 Percentage “At or Above Proficiency” in Math	38%	31%
NA	2005 Grade 8 Science Average Score (latest)	NA	147
ACT Scores 2007 ²			
22	Pennsylvania’s 2007 Average ACT Science Score	21.5	21.0
15	Pennsylvania’s 2007 Average ACT Math Score	21.9	21.0
48	Percentage of Graduates Taking ACT in 2007	11%	42%
SAT® Scores & Advanced Placement (AP) Percentages 2007 ³			
44	Pennsylvania’s Average Mean Score for SAT Mathematics	499	515
36	Pennsylvania’s Percentage of Graduates Taking AP **	17.7%	24.9%
32	AP Math Exam — Percentage of High Schoolers Taking	6.6%	9.4%
28	AP Science Exam — Percentage of High Schoolers Taking	5.9%	8.1%
25	AP Math Exam — Percentage Earning Grade of 3 or higher	4.6%	5.5%
22	AP Science Exam — Percentage Earning Grade of 3 or higher	3.7%	4.5%
College Readiness Indicators: % ACT -Tested Students ²			
15	ACT Algebra — % of H.S. Graduates ready for College Level	51%	43%
22	ACT Biology — % of H.S. Graduates ready for College Level	32%	28%
Teacher Quality Indicators (K-12) 2004 ⁴			
NA	Percentage of Middle Level Science Teachers Certified	unreported	54%
NA	Percentage of Middle Level Math Teachers Certified	unreported	49%
NA	% of H.S. Chemistry Teachers with Main Certification in Chemistry	unreported	53%
NA	% of H.S. Math Teachers with Main Certification in Math	unreported	79%
NCES Key Educational Statistics - Public Schools (latest) ⁵			
13	Expenditure per Pupil 2005 - 2006 School Year	\$10,723	\$9,154
7	Enrollment in Public Elementary & Secondary Schools, 2005-2006	1,830,684	49,676,964
41	Low-Income Students, 2005-2006	31.4%	40.9%
NA	Limited English Proficient, 2005-2006	unreported	8.5%
14	Percent of Students in Title I Schools, 2005-2006	63.4%	49.3%
29	Percent of H.S. Students who Graduated as Reported by State 2005	86.5%	86.5%
6	Number of Full Time Equivalent (FTE) Teachers, 2005-2006	122,397	3,136,921
Public Elementary & Secondary Schools Data 2005 - 2006 ⁵			
10	Number of School Districts	501	14,383
8	Number of Schools	3,250	98,905
28	Pupil / Teacher Ratio	15.2	15.47

K-12 Science & Math Education is Essential for a Skilled Workforce. Of the 30 fastest-growing occupations projected through 2016, the U.S. Bureau of Labor Statistics' *Occupational Outlook Handbook* concludes that 16 of them will require substantial Mathematics or Science preparation. A series of reports from key business groups, scientists, and educators proposes a number of actions that must be undertaken NOW to improve K-12 Science and Mathematics so that we can ensure our students have the skills to compete in the world economy. These actions will be critical to maintaining our nation's economy, quality of life, national security, and future scientific and technological innovations. For more information: <http://www.nap.edu/books/0309100399/html> ; <http://www.bhef.com/MathEduReport-press.pdf>; www.aboutastra.org and www.usinnovation.org

Sources: 1. U.S. Department of Education, National Center for Education Statistics, Institute of Education Sciences, *National Assessment of Educational Progress (NAEP) 2007 (Mathematics) and 2005 (Science)*; 2. ACT, Inc.; 3. The College Board; 4. Council of Chief State School Officers (CCSSO) and State Departments of Education, *Data on Public Schools, 2003-2004*; and 5. U.S. Department of Education, National Center for Education Statistics.

AP ** = SAT Advanced Placement Exam.



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