

# *Creating the Passion for STEM Learning!*



*Why it is Important  
in this 21st Century Global Economy!*



*Aristotle*  
384-322 BC

*“The fate of an empire depends on the education of its youth”.*



76% of all jobs now require education beyond high school. 43% require a bachelor's degree.

The top 10 jobs in demand today did not exist 5 years ago.

Technical information doubles every 2 years.

Richard Judy, Discovery Institute (2004).  
Bill and Melinda Gates Foundation Annual Report (2009).  
Rising Above the Gathering Storm, Revisited (2010).



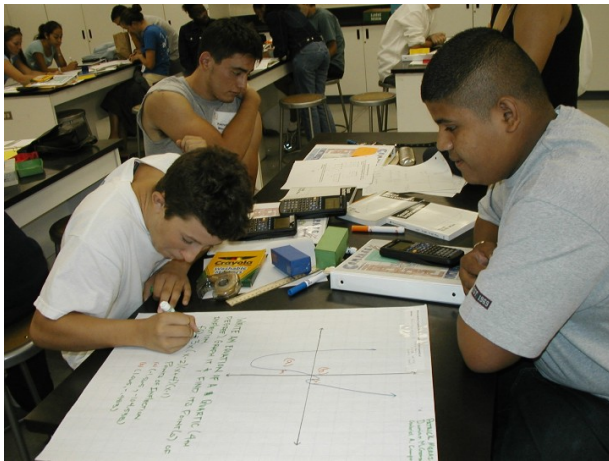
*Every 5 minutes 67 U.S. babies are born, along with 274 Chinese babies and 395 Indian babies. India has more honors students than the U.S. has students.*

*51% of U.S. patents awarded in 2009 went to NON U.S. companies.*

*Roughly 31% of U.S. public debt is foreign owned.*



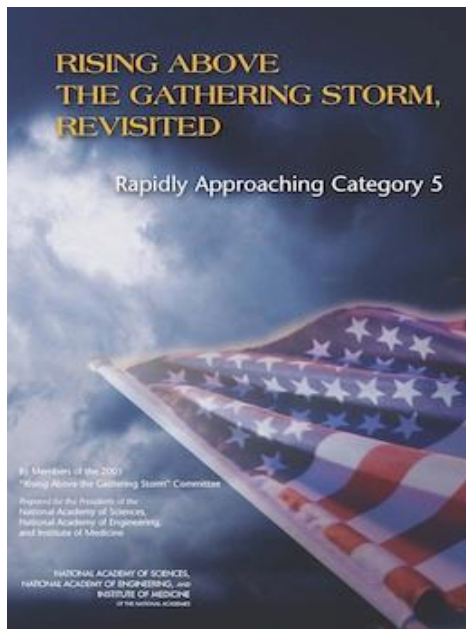
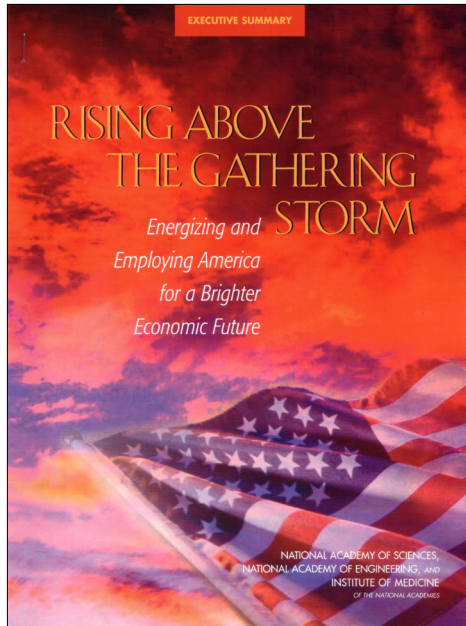
# Crucial skills include:



*Creative and innovative thinking.*

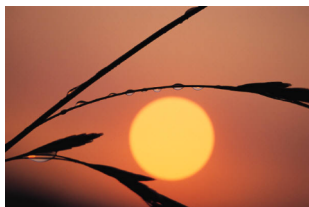
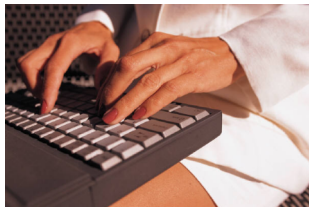
*The ability to analyze, synthesize and evaluate information accurately.*

*The talent for effectively working in a team.*

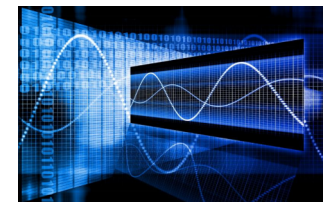


*...85% of measured growth in "U.S. per capita income" is due to technological and scientific innovation!*

# Fastest Growing Jobs 2008-2018



<b>Engineering</b>
<b>Computer Science</b>
<b>Data Systems Management and Communication</b>
<b>STEM Education</b>
<b>Medicine</b>
<b>Business Services</b>
<b>Energy and the Environment</b>



# College Students who major in STEM

...will have more opportunities for employment.

By 2018 there will be 3 million NEW or replacement jobs in STEM... 65% will require a bachelor's degree or higher.

U.S. Department of Commerce  
Good Jobs Now and for the Future  
Langdon, McKittrick, Beede, Khan and Doms, 2012





# College Students who major in STEM ...will earn a higher salary.

*STEM majors will earn a minimum of \$500,000 MORE over their lifetime compared to non-STEM majors even if they don't work in a STEM career.*

U.S. Department of Commerce  
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Langdon, McKittrick, Beede, Khan and Doms, 2012





# Effective Teachers:

Have strong content knowledge and use a rigorous curriculum pertinent to a global society.

Possess a sense of what students “have learned” and what they “need to learn” for future success.

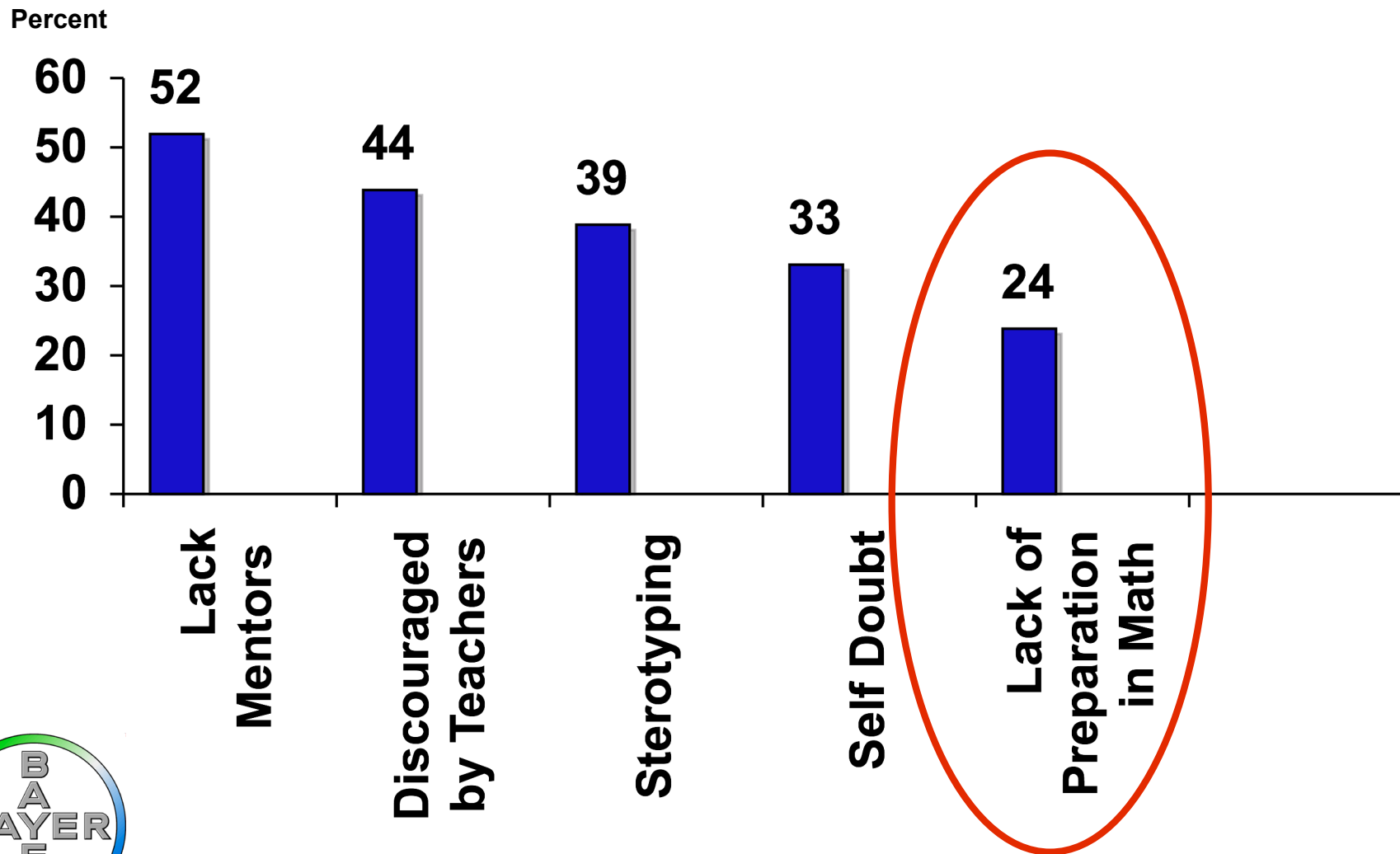
Allow for “student lesson engagement” to deepen understanding and improve thinking.

Integrate subjects while balancing the teaching of factual information with problem solving skills.



Use instructional strategies that make information interesting and relevant to a diverse student population.

# Major Barriers for Women and Minorities in Pursuing STEM Career.



Source Bayer Corporation, "Facts of Science Education" March 2010.

*The highest level of Mathematics taken in high school... is the strongest predictor of BA degree attainment... regardless of race, family income or background.*

<i>Highest High School Course</i>	<i>% of Students Earning a BA Degree by age 25</i>
Algebra I	7%
Geometry	17%
Algebra 2	39%
Trigonometry	60%
Pre-Calculus	75%
Calculus	83%

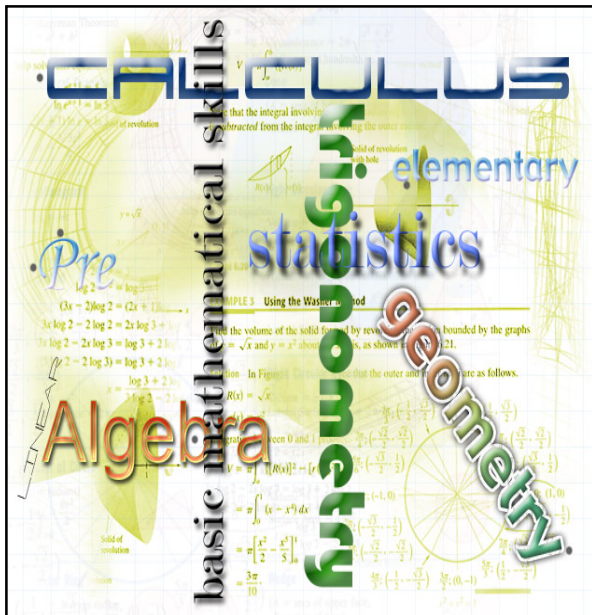
# *In California 2012*



*60% of students entering the CSU system require remedial coursework in mathematics, and/or English/Language Arts.*

*83% of students entering the the CCC system require remediation in mathematics and 72% in English/Language Arts.*

*26% of UC freshmen require remediation in writing.*



65% of American jobs over the next 10 years will require even entry-level workers to be proficient in:

- algebra
- geometry
- data interpretation
- probability
- statistics



Women represent 47% of the U.S. labor force. They will account for 51% of the increase in “labor force growth” between now and 2018.



Women represent 59% of the nation's college population but.... less than 1/3 major in Science, Technology, Engineering or Mathematics.

*America must reaffirm its role as the world leader in scientific discovery and technological innovation. That leadership will depend on how we educate our youth in STEM ...today.*



*Economists say that if the U.S. could improve mathematics and science achievement so that its students become more globally competitive, America's gross domestic product could grow an additional 36%.*

*If we, as a society are going to solve complex problems like:*

- Controlling pollution.*
- Managing transportation.*
- Developing new energy sources.*
- Revitalizing our urban areas.*
- Finding ways to better conserve water.*



*We need scientists, technicians, engineers, mathematicians, policy makers AND citizens who can meet the needs of today without jeopardizing the quality of life for the future.*