

November 4, 2006

STEM Career Component

Science, Technology, Engineering and
Mathematics Career Activities
NSF ITEST Grant

NSF ITEST - MLML

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Why the STEM Emphasis?

- NSF requirement of this grant
- Work place demands – since 1990 new STEM job openings have grown at 3 times the rate of other occupations
- 30% of current STEM work force is nearing retirement
- 25% of current STEM workers in USA are foreign born



and

- STEM careers on average pay 50% more than non-STEM careers (41% to 54% more)
- Minorities and women are still **grossly under represented** in STEM occupations
 - Women increased from 12% of STEM workforce in 1980 to 25% today
 - Minorities (Black & Hispanic) from 2.3% in 1980 to 6% today



What works?

- Project-based learning and webquests
- “Hands-on/minds-on” science, higher-order thinking skills & problem solving
- Career counseling at middle school - kids limit their career choices to 3 to 5 careers in middle school years.
- Math/science/technology integration activities in middle school years



and

- Tutoring in content areas
- Mentoring (engineering societies, visits to work sites, and virtual field trips)
- Integration of career components in regular instruction (name dropping)
- Modeling the use of science, mathematics and technology in every day work and in the classroom



also

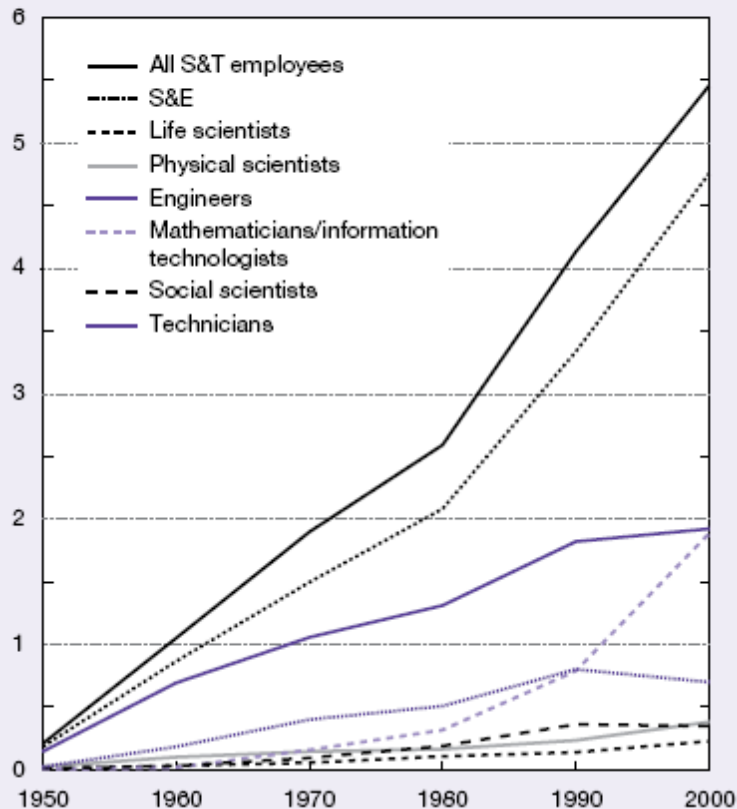
- “Real-world” learning and/or connections of classroom learning to real-world practice
- Constructivist viewpoint toward teaching and learning: tasks, groups, and sharing
- Internships, summer programs, and work experiences



Big picture

Figure 3-1
Science and technology employment: 1950–2000

Employees (millions)



Implementing STEM

- Include careers often – mention career connections as part of basic instruction
- Participate in school career activities
- Invite guest speakers to the classroom
- Field trips to job sites
- Include career awareness activities throughout the year



Resources

- CEOSE (2004). *Broadening Participation in America's Science and Engineering Workforce*. Committee on Equal Opportunities in Science and Engineering. Washington, DC.
- ITEST Learning Resource Center (2004). *Active Learning in the Information Age*. Washington, DC.
- National Science Board (2006). *America's Pressing Challenge - Building a Stronger Foundation*. National Science Foundation. Washington, DC.

