Some Things Old, Some Things New

James Seay Brown and Wallace S. Prescott
Distinguished Lecture Series in Engineering
January 24, 2011
Current Issues in Engineering Education – Suggested Reading


Recommendation A: Increase America’s talent pool by vastly improving K–12 science and mathematics education.

Recommendation B: Sustain and strengthen the nation’s traditional commitment to long-term basic research.

Recommendation C: Make the United States the most attractive setting in which to study and perform research.

Recommendation D: Ensure that the United States is the premier place in the world to innovate.
No profession unleashes the spirit of innovation like engineering. From research to real-world applications, engineers constantly discover how to improve our lives by creating bold new solutions that connect science to life in unexpected, forward-thinking ways. Few professions turn so many ideas into so many realities. Few have such a direct and positive effect on people’s everyday lives. We are counting on engineers and their imaginations to help us meet the needs of the 21st century.
ENGINEERS MAKE A WORLD OF DIFFERENCE
From new farming equipment and safer drinking water to electric cars and faster microchips, engineers use their knowledge to improve people’s lives in concrete, meaningful ways.

ENGINEERS ARE CREATIVE PROBLEM-SOLVERS
Engineers have a vision for how something should work, and are dedicated to making it better, faster or more efficient.

ENGINEERS HELP SHAPE THE FUTURE
Engineers use the latest science, tools and technology to bring ideas to life in forward-thinking ways.

ENGINEERING IS ESSENTIAL TO OUR HEALTH, HAPPINESS AND SAFETY
From the grandest skyscrapers to microscopic medical devices, it is impossible to imagine life without engineering.
“Tag Lines” That Tested Well

- Turning Ideas into Realities
- Because Dreams Need Doing
Some Things Old
What have we done well?

- rigorous base in math and science, strong engineering content
- the importance of design and experiential learning (labs, co-ops, internships)
- faculty quality
- emphasis on research and creativity
- effective use of reward structure
- student quality/accessible education
integration of knowledge – separation into lower and upper division; little interdisciplinarity

communication skills

preparation for global marketplace

diversity

efficiency (excessive bureaucracy)
Axiom 1. Engineers serve society

Axiom 2. Fundamentals are fundamental

Axiom 3. Education and training are not synonymous, nor are teaching and learning

Axiom 4. The public’s view of education is “important, but not urgent”
Some Things New.....

- Increasing partnerships between engineering educators and learning scientists
  - An increasing emphasis on “learning” in contrast to “teaching”
  - Team learning and other learning innovations
  - Learning is not classroom-centric
  - The myth of e-learning: 
    (http://campustechology.com/articles/2011/01/19/the-myth-of-elearning.aspx)

- Creating a culture of scholarly and systematic innovation in engineering education

- Increasing need for interdisciplinary education and motivating students by “Grand Challenges”
Implications to the Technological University?

- The next decades should be “our time”
- Connect engineering education to the aspirations of today’s youth
- Embrace the connection between engineering education and economic development
- Stress interdisciplinarity – engage with other colleges in the university
- Be innovative in exploring different ways of learning
- Align the reward system for faculty with desired outcomes
THANK YOU!

And congratulations to Professor Brown and Professor Prescott!