

An ASEE Perspective on Issues and Opportunities in Engineering Education

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Issues in Engineering Education in the U.S.

- Are our curricula at the leading edge so that engineering graduates are both “work ready” and prepared for lifelong learning?
- Are faculty using principles from learning science?
- Is the U.S. graduating an adequate number of engineers?
- Are we attracting a diverse population of students into engineering?
- Are we successful in retention, graduation, and employment?
- Are we well balanced in terms of education and research?
- Are resources adequate?

Issues in Engineering Education in the U.S.

- **Quality** of curricula and the learning experience
- **Quantity** of engineering and engineering technology graduates
- **Resources** for quality engineering education

***American Higher Education is Highly
Heterogeneous.....***

Quality.....

- Technical Depth vs Breadth
 - Axiom: *“Fundamentals are fundamental”*
 - Rapid changes in technology
- Learning vs Teaching
 - Axiom: *“Teaching and Learning are not synonymous”*
 - Principles of learning science
- Inclusion of “non-technical” experiences
 - Innovation and leadership
 - Preparation for global economy

Quantity.....

- Recruitment
 - Emphasis on STEM in K-12
 - Diversity
- Retention
 - Engineering experiences early in curriculum
 - Engagement (team learning, faculty role)
- Careers
 - Internships, co-op experience, placement
 - Engagement with industry



Resources.....

- Public vs Private institutions
- Financial aid
- Cost of engineering programs
- Educational technology
- University business practices (or lack thereof!)

What is ASEE Doing.....?

- **Quality** of educational experience
 - Publications (*Journal of Engineering Education*, *Advances in Engineering Education*, *Prism*)
 - Emphasis on scholarship in engineering education
- **Quantity** of engineering graduates
 - K-12 (K-12 Division, “Engineering: Go for It”, Council Committees)
 - Diversity (Council Committees)
 - Retention project (White House and President’s Council on Jobs and Competitiveness)
- **Resources** for engineering education
 - Engineering Deans Council: Public Policy Committee
 - Source of impartial data (Engineering College Profiles and Statistics; Faculty salary data)
 - “Innovation with Impact” – three year project on creating a culture of innovation in engineering education

Implications to TPU Project....

- Similarities and differences between U.S. and other countries
- Accreditation
- Exchanges

COMPETITION VS COLLABORATION.....

ADAPTIVE SYSTEMS.....