
Global Engineering Education Excellence: An International Study

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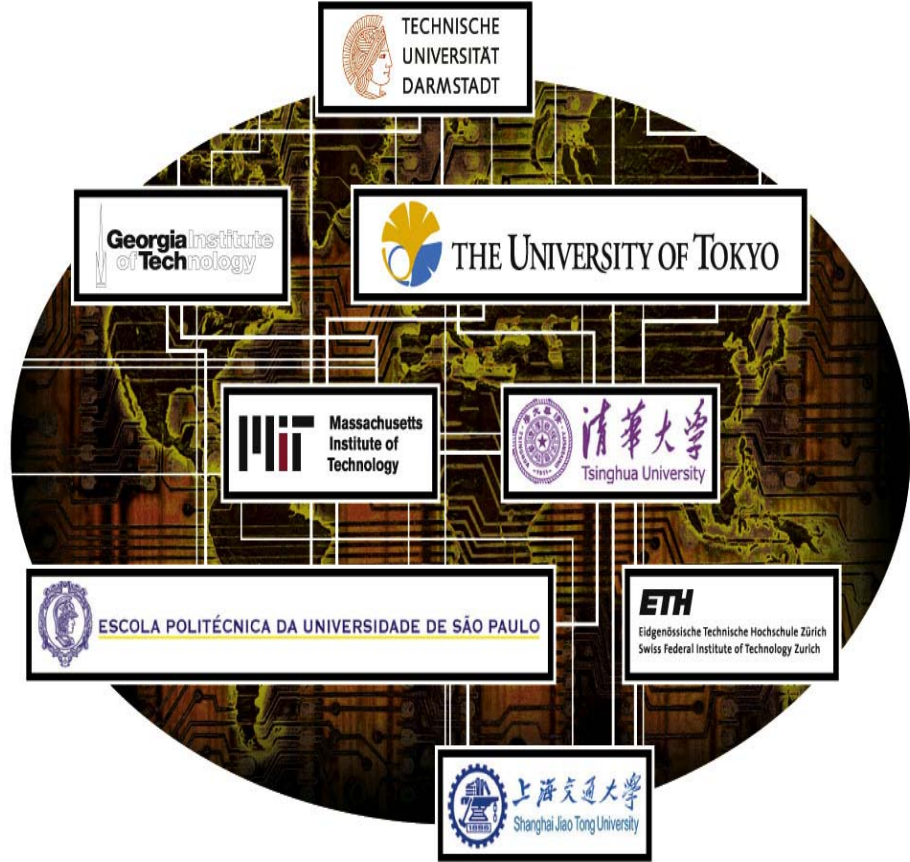


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The Starting Line

- Globalization: Changing the way national economies produce, distribute, and consume good and services
- Engineers: in the midst of globalization
- Work in teams on projects with members from different countries, internationally mobile, physically and virtually
- How do we prepare the engineering workforce for this reality?
- International study, commissioned by German automotive supplier Continental

The Team



A Common Goal and Vision

The Global Engineer is

- technically adept
- broadly knowledgeable
- multilingual and culturally aware
- innovative and entrepreneurial
- knowledgeable about world markets
- commercially savvy
- professionally flexible and mobile

The Local within the Global:

The situation of engineers around the world

- Brazil: nimble at technology transfer, but insufficient social standing and compensation
- China: tremendous long-term engineering human resource, but need for creativity and modes of innovation -- Who is an “engineer”?
- Germany: high social standing, innovative, high quality of work, but lack of mobility and flexibility



The Local within the Global:

The situation of engineers around the world

- Japan: resource efficient and environmentally conscious, but “workforce islands”, i.e. lack of industrial and educational mobility
- Switzerland: long history of multicultural assimilation and international cooperation, but need for more entrepreneurship and innovation in engineering education
- United States: technologically advanced economy, but increasingly dependent on foreign-born engineering talent, lack of interest in engineering among young students

Roadblocks

- Preparation for global practice is generally not viewed as central to an engineer's education
- International mobility remains a challenge
- Globalization and collaboration need to go hand in hand and call for substantial partnerships
- Lack of knowledge about proven theories and effective practices for instilling global competence

1. Recommendation

Global Competence has to become a key qualification of engineering graduates

- Global preparation must move beyond “add-on” programs
- Make international preparation a priority
- International research and education should come together
- Research universities should exploit international potential
- Greater supportive role of industry

2. Recommendation

Transnational mobility for engineering students, researchers, and professionals needs to become a priority

- Universities
 - Remove barriers to studying, working, conducting research, and attending meetings internationally, expand incentives
 - Develop more flexible approaches to their educational programs
 - Create strong inter-institutional international partnerships
- Governments
 - Relax restrictive visa policies and work permits

2. Recommendation

Transnational mobility for engineering students, researchers, and professionals needs to become a priority

- Funding agencies
 - Provide more support for international study, work, and research programs
- Industry
 - Support faculty and student mobility
 - Offer sabbatical stays in industry to promote awareness of the global practice of engineering

3. Recommendation

We call for a mutual commitment to partnerships between engineering education and professional practice

- Industry must take the lead in developing opportunities for students to practice engineering in a global context
- Universities should initiate more collaborative activities with industry
- Professional engineering organizations should collaborate more across the borders

4. Recommendation

Research on engineering in a global context is urgently needed

- Need for theoretical foundation on learning behavior and models
- Need to learn more on organizational processes and management methods that instill global competence in engineers
- Government agencies need to create programs that support research on global engineering
- Industry participation in the assessment and evaluation of international experiences is vital

For more information

<http://www.global-engineering-excellence.org/>

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