

Experiential Learning: Research Projects, Service Learning, Short-term Programs

Eckhard A. Groll

Professor of Mechanical Engineering
Director of the Office of Professional Practice

Purdue University,
School of Mechanical Engineering
West Lafayette, IN 47907, USA



Office of
Professional Practice

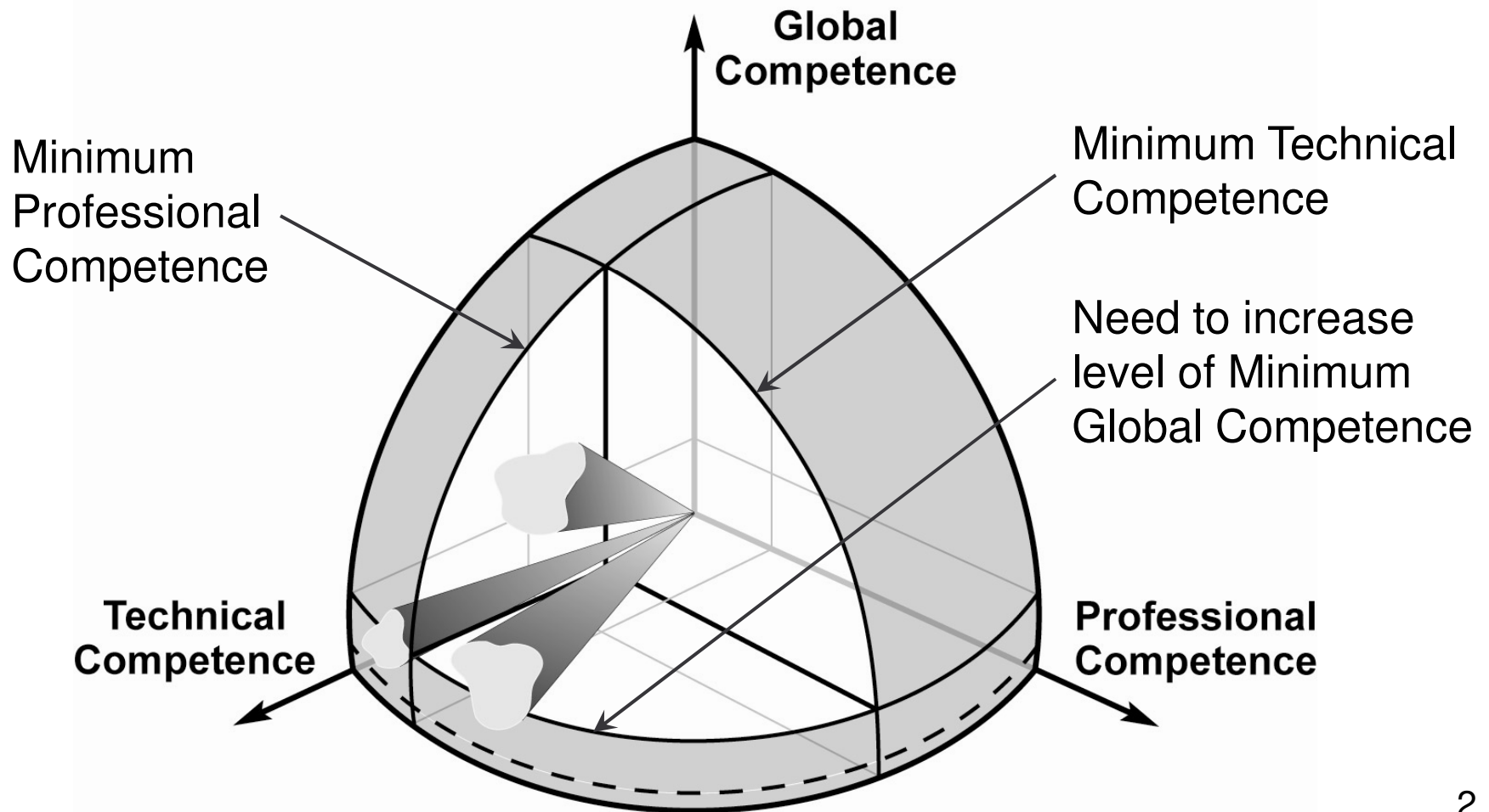


GEARE

Global Engineering Alliance
for Research and Education

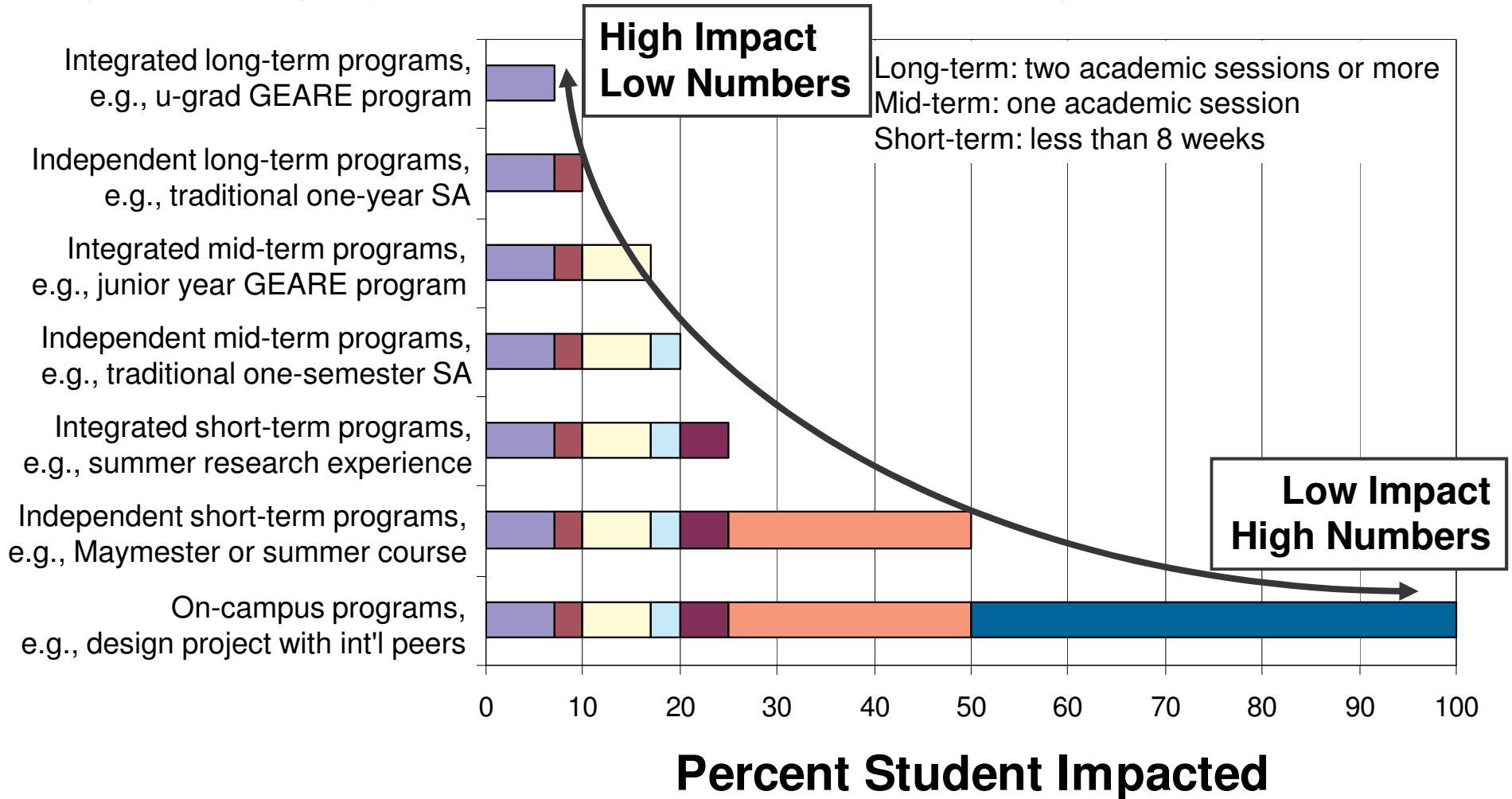
Educating the Global Engineer

Pathways for Global Engineering Competency:



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Spectrum of programs to increase level of global competence:

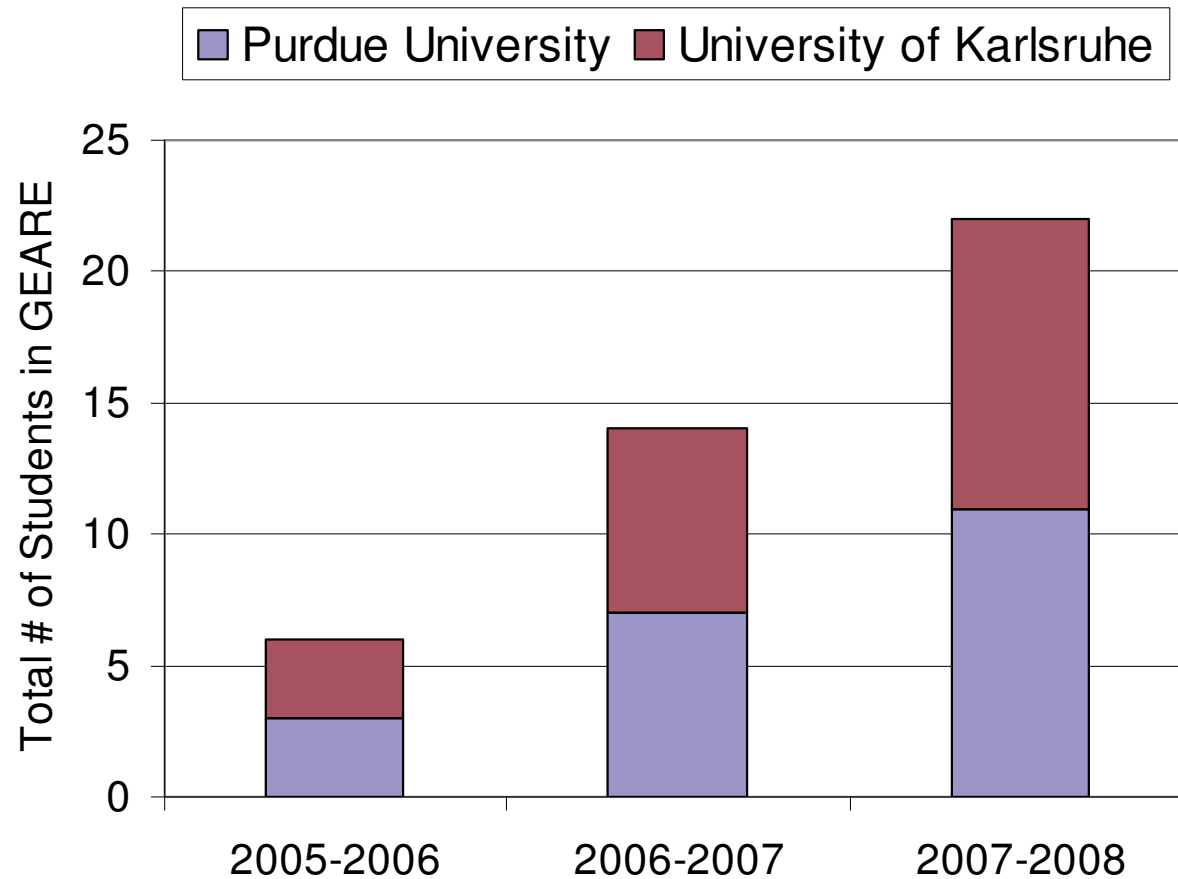


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- Example of High-to-Medium Impact Program:
”Graduate GEARE Program”
 - » Started in 2005 with funding from German Ministry for Business and Work
 - » Purdue’s portion approx. \$80k/year for 3 years
 - » Co-PIs
 - Prof. Albert Albers (University of Karlsruhe)
 - Prof. Eckhard Groll (Purdue University)
 - » Basic idea is to team up one Karlsruhe student with one Purdue student for six-month uninterrupted and course-free project
 - » Three modes of operation:
 - 1+1 team at Purdue
 - 1+1 team at Karlsruhe
 - 1+1 team in cyberspace

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Graduate GEARE Student Participation:



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- Example of Medium-Impact Program:
 - ”The Junior Year GEARE Program”**
 - » New program initiated by ME → 1st go around in 2009
 - » Cohort of up to 30 students will conduct second semester of junior year at Shanghai Jiao Tong University (12 students in 2009)
 - » One semester of study abroad with fully transferable course credits
 - » Courses co-enrolled by SJTU students
 - SJTU students coming to Purdue
 - » Courses taught in English
 - » Orientation in foreign culture before going abroad

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- Example of Medium-to-Low Impact Program:
”Summer Research Experience”
 - » DAAD Rise Program
 - Team up US undergrad with German PhD student for summer research experience
 - » Hannover Program (DAAD co-sponsored)
 - one-week introduction to engineering research methods and teaming with German study-buddy
 - seven-week research project, carried out in English
 - placement with research groups of Mechanical Engineering at University of Hannover
 - weekly round-table discussions of research activities
 - excursions to Goslar, Harz mountains, Berlin, Hamburg, and Bremen
 - housing with host families or in residence halls

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- Example of Low-Impact Program:
 - ”Maymester Course”**
 - » Energy in a Global Context (3 credit hours)
 - » Two-week course at University of Karlsruhe
 - » Co-listed at University of Karlsruhe
 - » Taught in English, offered biannually
 - » 1st time in May 2007
 - 12 Purdue students + 8 Karlsruhe students
 - » All in-class and homework assignments in daily changing 1 KA + 1 or 2 PU student groups
 - » Co-instructor from GA Tech
 - » Some universities will provide “seed-money” for programs like this

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- The “Untapped” Potential

- ***“Global Community at Home University”***

- » Global perspectives & problems in traditional courses
 - » Distance global design team projects, e.g.,
 - EPICS program with University of Puerto Rico – Mayaguez
 - EPICS program with University of Auckland, New Zealand
 - » Local global design team projects
 - Draw on large international population
 - Have international faculty lead the team
 - » Make on-campus participation in global aspect requirement of curriculum
 - » Use these activities to recruit for programs abroad

Summary

- Program Design Issues:
 - » Time to graduation – no impact
 - » Financial costs to students – no impact or benefit
 - » Co-located and intercultural teams – a priority
 - » Global workplace engineering experience – a priority
 - » Engineering design opportunities – a priority
 - » Second-language competencies – integrated in available curricular options
 - » One-on-one interactions – a priority

