Working With China Light
A Focus on ~~Short-Term~~ Programs

Larry Shuman

9th Annual Colloquium on
International Engineering Education
Newport, Rhode Island

A quick look at some of our efforts in China

Important Drivers

- Rapidly changing technology, especially information technology
- Corporate downsizing
- Outsourcing
- Globalization

One way to do this

- Focus on global studies
- Put students in a setting in which they can begin to learn about different cultures
- Provide an opportunity to compare countries and cultures while studying such global problems as environment, sustainability, globalization, etc.

If done right, can address

- 3.h. - understanding the impact of engineering solutions in a global, economic, environmental and societal context.
- 3.j. - knowledge of contemporary issues
- As well as:
  - 3.d. - multidisciplinary teams,
  - 3.f. - ethical and professional responsibilities,
  - 3.g. - communication, and
  - 3. i. - life long learning

Why Short-term Programs?

- Increase in popularity of short-term programs
  - In 2005, 56% chose summer, J-term, or other program less than one semester for study abroad
- Factors
  - Don’t delay time to graduation
  - Incorporate international experience in creative and relevant manner
  - Frequently less expensive
  - Easier for students to study in non-English speaking, non-traditional destinations
  - Easier option for non-traditional aged students
  - Whet a students desire to go abroad again

A little about Pitt

- State related university
- 2000 UG engineering students; 550 graduate students.
- Freshman class: 400 to 430
  - Average SAT: 1290+
  - More than half in top 10% of HS class
- Emphasize international experience when recruiting
- Strong International Focus
  - 5 Title VI Centers including Asian Studies Center and CIBER (International Business Center)

China's transformation's impact on engineering, technology, and business?

How can students gain the skills needed to be effective in a global economy?

Three Programs

- Nanjing – Focus on Language and Research
- Beijing – Plus3
- INNOVATE (with IAESTE, Rice and Tulsa)

Pitt in Nanjing

Nanjing Program

- Begun in 1996 under NSEP Funding
  - First year at Xi'an
  - Moved to Nanjing University of Chemical Technology
- Original concept included outreach to high school students and teachers
- Six week program –
  - Engineering and language training
- At peak, 40+ participants
- Created Chinese Language Courses for Engineers (3 credits each).

Current Format

- Follow-on to two terms of Chinese language (six credits)
- For Engineering and Business students
- Four week program ($3,000)
  - Chinese language (three credits)
  - China's Economic Development (three credits)
- Four additional weeks (+$500)
  - Research internship

Quick assessment

- Works for a small number of independent students.
- NSEP funding
  - sent engineering faculty member
  - ENGR 0005 – Technology in an Engineering Context
  - Couldn't support without additional funding or students
- On-site coordinator is excellent – a key for success
- Motivator for freshmen taking Chinese.
- Strong support of:
  - Asian Study Center for language instruction, pre-trip planning, orientation, etc.
  - International Business Center for underwriting help; promotion

Plus3 - China

Plus3 Program Goals

- Immerse young engineering and business students in China for two weeks

- Provide experiences in multiple dimensions:
  - Technical
  - Business
  - Cultural
  - Historical
  - Philosophical
  - Political

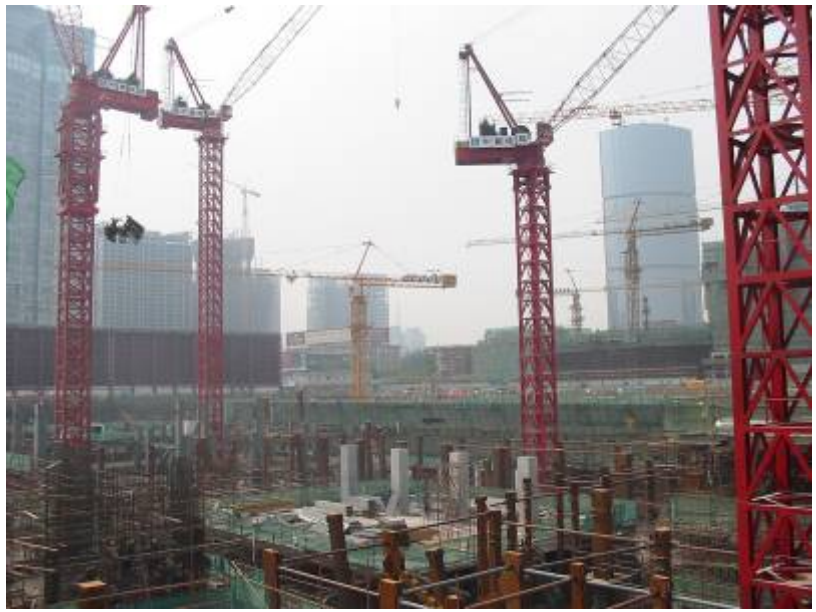
Plus3 – Three Credit IFTA Course

- Departure
  - Overview of history, philosophical traditions, relationship to west, economic development, art and architecture
  - Basic language instruction
  - Overview of companies to visit; team assignments
  - Tips on traveling; approximately half have not traveled internationally.

Plus3 – In-Country

- Company and University (Tsinghua) visits
- Lectures on economics, relationship to US, politics
- Continued basic language training
- Cultural activities
- Time to interact with Chinese hosts

Observe a few Chinese high-profile companies



Construction site:
New CCTV
Headquarters

PC Manufacturing and Logistics at Lenovo

Lenovo
Manufacturing plant and shipping center

High tech and low tech manufacturing

SMC:
Air cylinder products

CapitalBio:
Disease screening on a chip

Creating clean water for 16 million people

Gaobedian Waste Treatment Plant

Experience China's culture and history

Tiananmen Square
May holiday

Experience China's culture and history

Temple
at Summer Palace

Fragrant Hill Park

Experience China's culture and history

Great Wall at Jinshanling

Examine research at Tsinghua – a premier engineering university

Scale model:
Three Gorges Dam
to test sediment patterns

Robotics laboratory

Study language, history, politics, religion/philosophy

Plus3: Post-trip

- Complete an electronic journal
- Prepare a 25 page report
- Prepare a 15 minute presentation for symposium in early September
- Evaluation and reflection

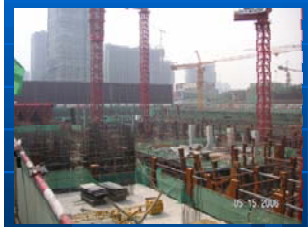
Synthesize, reflect, and transform the experience

Strategic Fit Within the Automotive Industry

- Youth
  - New Facilities = Innovative Techniques
  - Developing Identity
  - Market Selectivity
- Global Network
  - Local Facilities to Meet Local Needs
- Hybrid Vehicles
  - Leader in Hydrogen-Electric Hybrid Vehicles

One of Hyundai's Fuel Cell Electric Vehicles now being tested in California.

CCTV Headquarters



- Supposed to look completed by the 2008 Olympics
- Utilizing 2000 workers, 4000 workers at peak to complete project

Workforce

Large Labor Pool

Population of 14 Million People

Almost 11 Million People Between the Ages of 15 and 65

Many Job Seekers

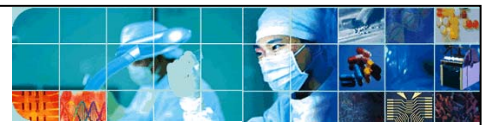
Low Cost Labor

Workers Are Paid Much Less Than in Developed Nations

Greater Profit Margins

lenovo

CapitalBio Corporation



Communism + Capitalism = Success ?

- China produces four times as many engineers as the United States
- Lower salaries for engineers
- Central Government Financing
- Lack of Silicon Manufacturing
- Out sourced to the United States

Quick Assessment

- Students rate program highly – 4.9/5.0
- A key to success – Grad Student assistant from Tsinghua now accompanies students.
- Lectures very good, but long
- More time has been added for language training – helped students with bargaining
- Company visits tweaked to better meet student interests
- Keeping costs down is a challenge
- Received 2005 Heiskell Award from IIE

INNOVATE 06

INNOVATE

The International Technology, Globalization and Leadership Conference for Engineering, Science and Technical Students

Examines the relationship between technology, globalization, and leadership in the contemporary marketplace.

Organized by Rice University (Cheryl Matherly), IAESTE (Lauren Alexander) and colleagues.

INNOVATE: 2006 Themes

- Contract manufacturing and China as the world's factory;
- Ethical obligations and realities of technology;
- Japan's leading edge on automotive technology and manufacturing;
- Consumer Electronics and the Digital Divide;

INNOVATE 2006

- Shanghai & Kansai
- 70 Delegates
  - 60 Students, 10 Advisors
- 12 Universities
- Professional Site Visits
- Keynote Talks
- Cultural Activities

INNOVATE 06

Past & Current Participants

ENGR 1600 (Pitt)/ENGI 205 (Rice) – Pre and Post Segments

- Comparative History of China and Japan
- Globalization
- Technology in a global economy
- China and the Global Market
- Japan and the Global Market
- China and Japan; China vs. Japan
- Engineering Ethics in a Global Market
- Popular Cultures in China and Japan

ENGR 1600 (Pitt)/ENGI 205 (Rice)

- Off to Shanghai and Osaka
- Return: Debriefing and Reflections
- Women in Postwar Japanese Films
- INNOVATE Campus symposium – Poster presentation (Pitt-Rice Teams)
- Women in China
- Final Report

Institutional Outcomes

- Capstone experience for students participating in international education programs
- Experience with programs in geographic region of interest to the university
- Leverage existing relationships with companies and universities; raise universities' visibility
- Complement existing research activities

Pitt Contingent

Quick Assessment

- Powerful experience for students
- A key – having delegates from US and Asia travel and live together
- More student demand then space
- Remains somewhat expensive for students
- Find a way for more students to participate in the course (three credits)
- Great draw for women! Can we get more men?

INNOVATE 2007

- Bangalore
- Beijing

Our next steps in China

- Upper division program – supply networks and outsourcing
- East vs. West medicine (Bioengineering)
- Virtual design opportunities
- Mongolian program with Honors College
- MS program in Taiwan; if successful will also try in Shanghai and Beijing

Challenges that remain

- Identifying key faculty to serve as advocates; achieving full faculty buy-in
- Establishing oversight and approval process; quality control function
- Developing new programs and courses,
- Streamlining process for approval of credits earned at international institutions,
- Soliciting gift funds for scholarships and infrastructure support
- Creating financial model for international activities