TEACHER EDUCATION FOR TECHNOLOGICAL LITERACY

National Academy of Engineering
April 28, 2004

Ronald D. Todd
Patricia A. Hutchinson
The College of New Jersey

- 7 Schools (Education, Engineering, Nursing, Business, Science, Art/Media/Music, Culture & Society)
- 289 Acres in Ewing, NJ
- 5,600 UG/850 Graduate
- 1300 SAT/91% CR
- 96% Retention Rate
- 3,600 Housed on campus
- 326 Faculty
School of Engineering Organization

Dean of Engineering and Assistant Dean

Department of Technological Studies
Department of Electrical/Computer Engineering
Department of Mechanical Engineering
Department of Technological Studies &
Center for Design and Technology

- Philosophy
- Teacher Preparation Programs
- Professional Development
- Research
The Design Continuum

Designers & Architects

User-centered knowledge

Engineers & Applied Scientists

Scientific/mathematical orientation
THE DESIGN LOOP

- Understanding the problem
- Gathering information
- Defining the problem
- Generating Ideas
- Choosing and developing
- Modifying and improving
- Testing and evaluating
- Planning and making
- Presenting the solution
The Interaction of Hand and Mind

Hazy impressions

Speculating & exploring

Clarifying & Validating

Critical Appraisal

Discussion, drawings, sketches, diagrams, notes, graphs, numbers

Solid modeling to predict or represent reality

Prototyping or finished product

REFLECTION

ACTION
Objectives of the Department

• Programs leading to technological literacy
• Exemplary K-8 Math/Science/Technology teachers
• Exemplary K-12 Technology Education teachers
• Ongoing research agenda around design-based learning
• Design and technology-oriented professional development
• Limited design and technology-oriented graduate programs.
Technological Studies
Degree Programs
110 Majors/5 Faculty

• 60 Technology Education
• 50 M/S/T Majors
• M.S. Educational Technology
  M.A.T. Technology Education
R&D Activities

- 1988  TIES Magazine™
- 1991  Project UPDATE (NSF, $1M)
- 1994  Project UPDATE-TEI (NSF, $1.2M)
- 1997  Children Designing & Engineering™ (NSF,$1.2M)
- 2000  Center for Inquiry and Design-Based Learning (USDOE $750K)
- 2001  Exploring Design & Engineering™ (NJCHE $2.5M)
May 5, 2003

Bill A2169 makes technology education part of New Jersey’s core curriculum content standards.

• Governor McGreevey Makes Technology Education Mandatory for New Jersey’s Students. “Technology Curriculum Will Lead to a Better Trained Workforce and Strengthened Economy”
• Standard 5 “Science”
  5.4 Nature and Process of Technology
  Standards for Technological Literacy (ITEA, 2000)

• Standard 8 “Technological Literacy”
  8.1 Computer & Information Literacy
  8.2 Technology Education
  Standards for Technological Literacy (ITEA, 2000)
  (design and engineering)
Engineering Graphics
Creative Design
Fundamentals of Technology
Structures and Mechanisms
Designing Production Systems
Electronic Control
Designing with Materials
Designing Production Systems
3-D Design
Senior Design
Questions:

- Dr. John R. Karsnitz, Chairperson
  School of Engineering
  The College of New Jersey
  PO Box 7718
  Ewing, NJ 08628-0718
  email: karsnitz@tcnj.edu
  (609) 771 2782