

Department of  
**technological**  
**studies**



**The College of New Jersey**

Dr. John R. Karsnitz, Dr. Patricia Hutchinson  
April 28, 2004

# TEACHER EDUCATION FOR TECHNOLOGICAL LITERACY

**National Academy of Engineering**

**April 28, 2004**

**Ronald D. Todd  
Patricia A. Hutchinson**

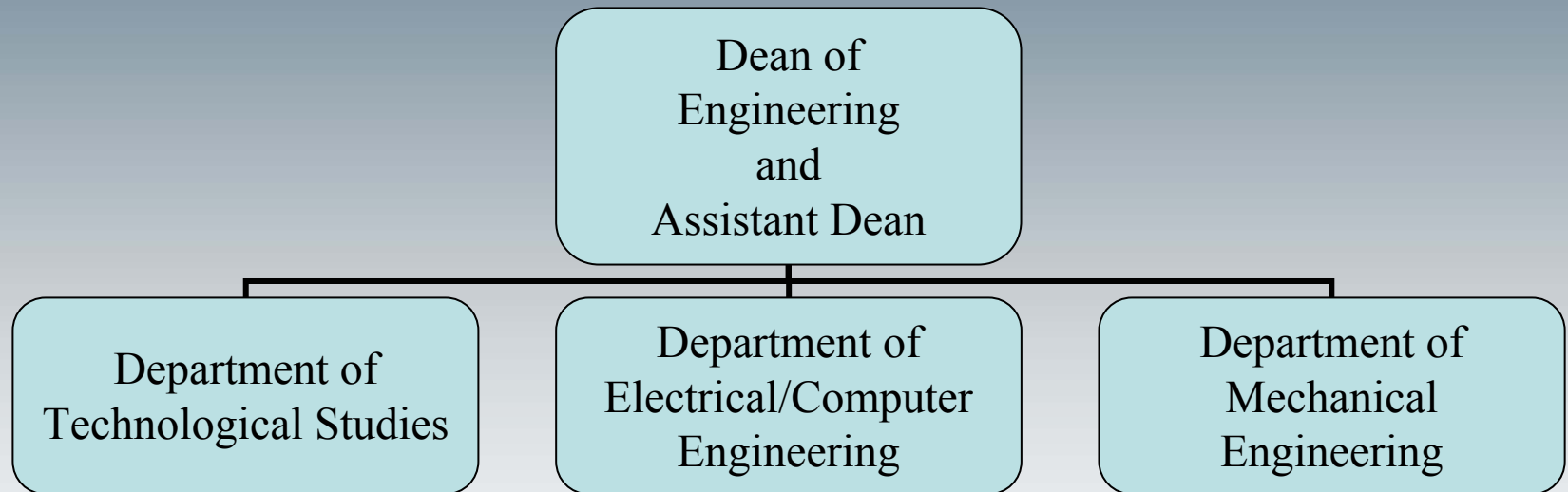


# The College of New Jersey

- 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



# Department of Technological Studies & Center for Design and Technology

- Philosophy
- Teacher Preparation Programs
- Professional Development
- Research



# The Design Continuum



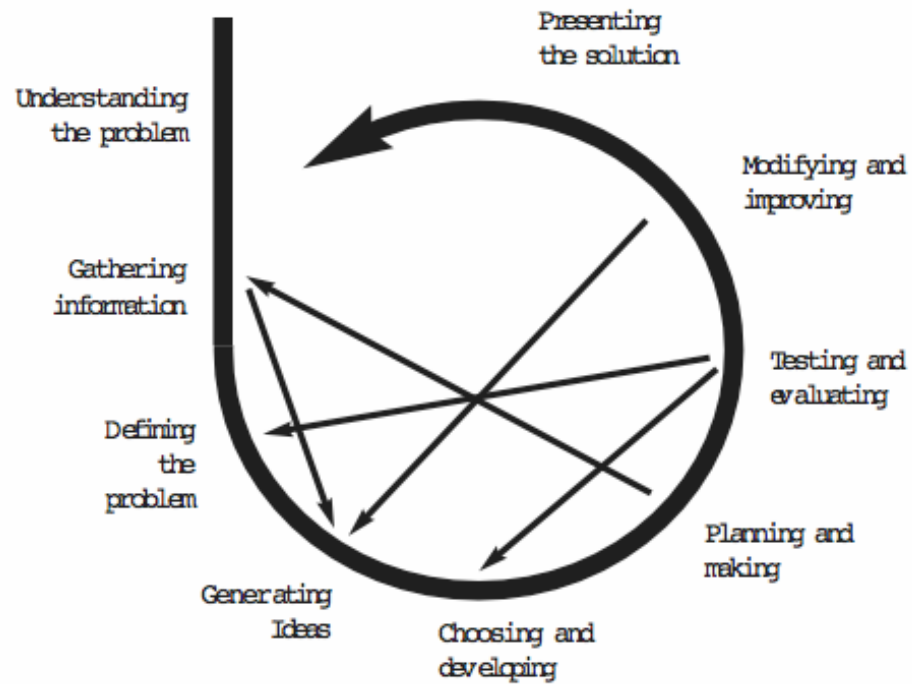
**Designers &  
Architects**

**User-centered  
knowledge**

**Engineers &  
Applied  
Scientists**

**Scientific/  
mathematical  
orientation**

# THE DESIGN LOOP



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# The Interaction of Hand and Mind

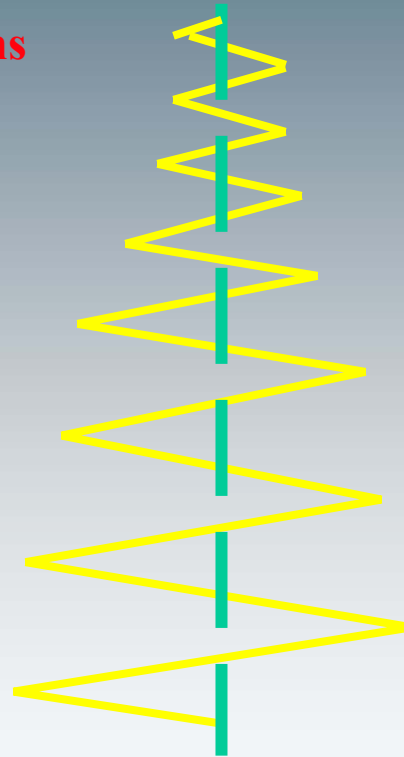
**Hazy impressions**

**Speculating &  
exploring**

**Clarifying &  
Validating**

**Critical  
Appraisal**

**REFLECTION**



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

**Solid modeling to predict or  
represent reality**

**Prototyping or  
finished product**

**ACTION**

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# 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.

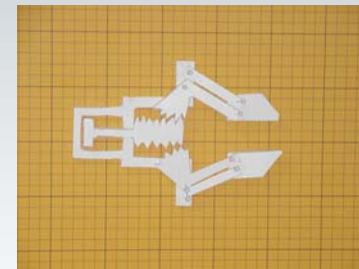


- Governor McGreevey Makes Technology Education Mandatory for New Jersey's Students. *"Technology Curriculum Will Lead to a Better Trained Workforce and Strengthened Economy"*

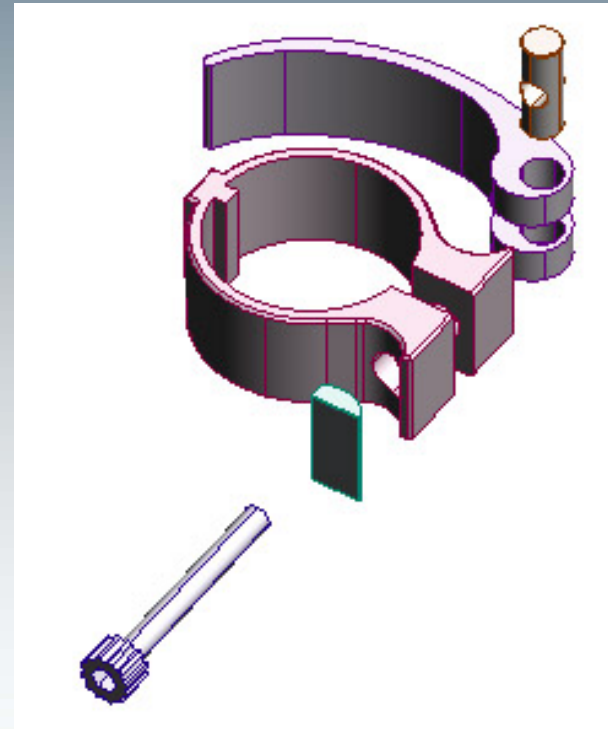
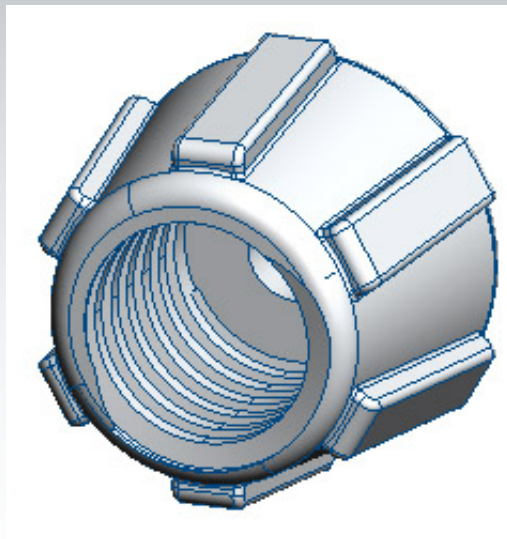
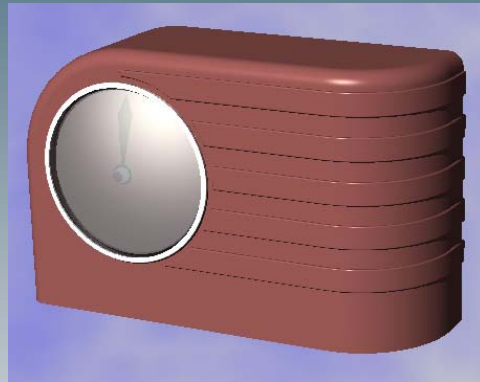
- **Standard 5 “Science”**  
**5.4 Nature and Process of Technology**  
*Standards for Technological Literacy (ITEA, 2000)*



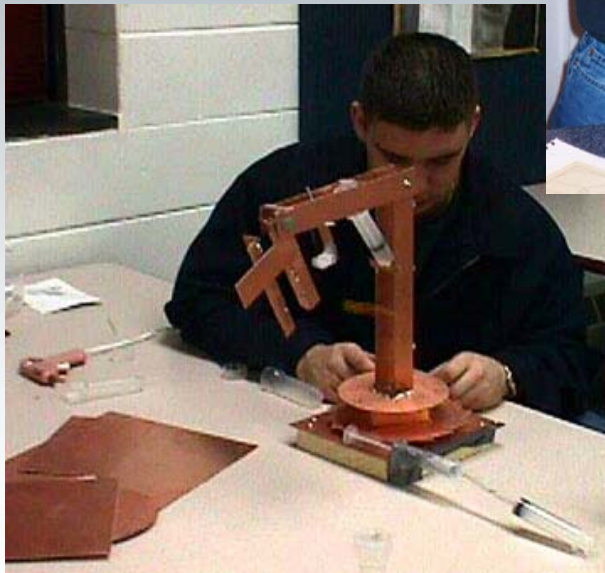
- **Standard 8 “Technological Literacy”**  
**8.1 Computer & Information Literacy**  
**8.2 Technology Education**  
*Standards for Technological Literacy (ITEA, 2000)*  
**(design and engineering)**



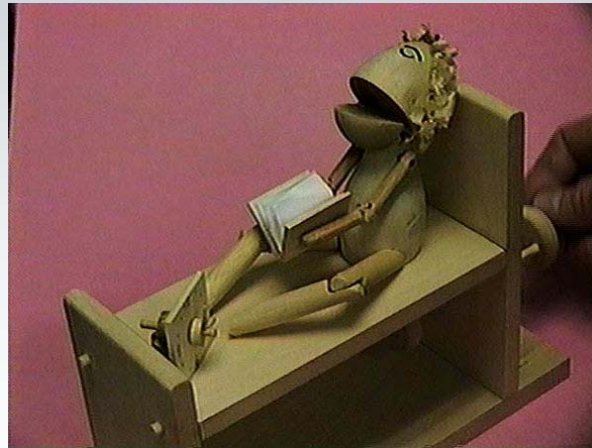
# Engineering Graphics



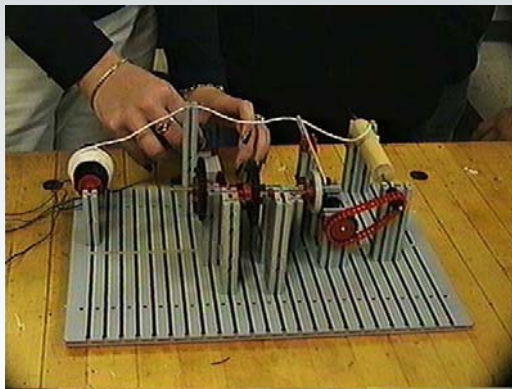
# Creative Design



# Fundamentals of Technology



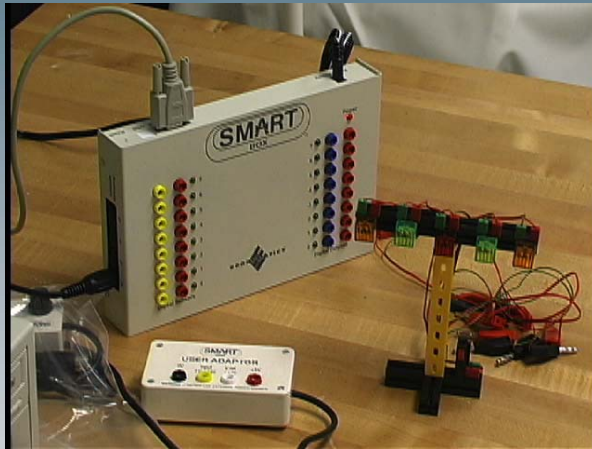
# Structures and Mechanisms



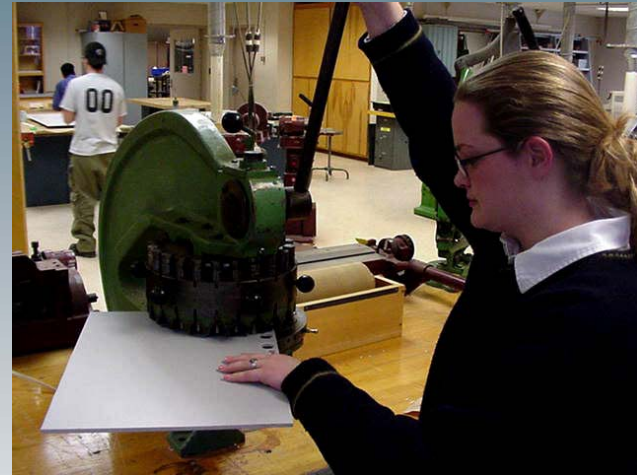
# Designing Production Systems



# Electronic Control



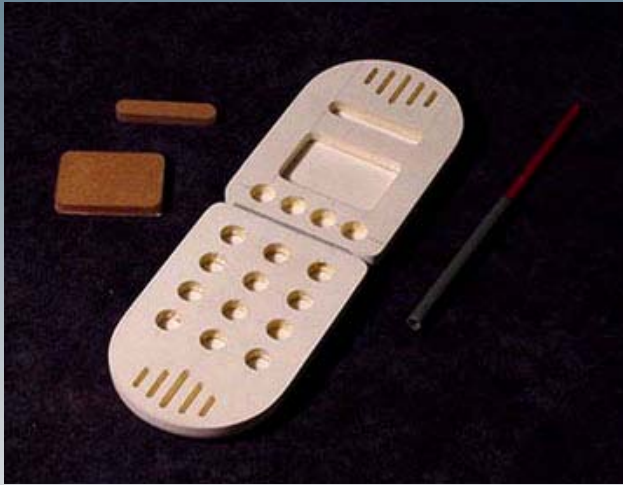
# Designing with Materials



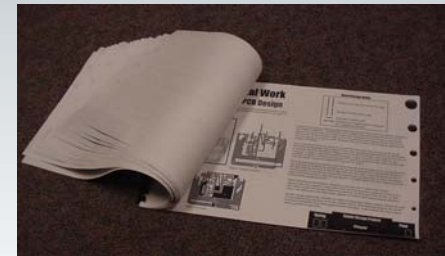
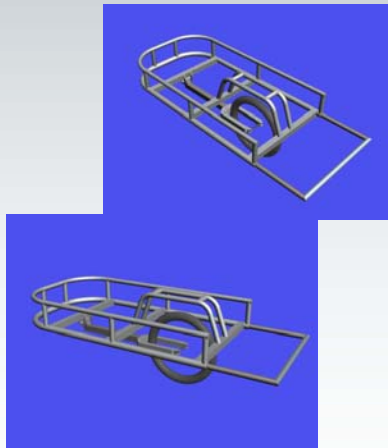
# Designing Production Systems



# 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](mailto:karsnitz@tcnj.edu)  
(609) 771 2782