# A Multi-Disciplinary Approach to Design and Creative Problem Solving

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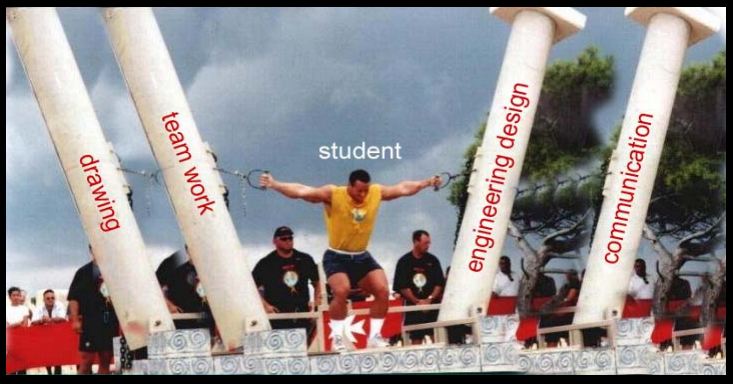
## Our Students

- 600 first year engineering students
- Work together in teams of 4
- 1 lecture, 2 labs (4.5 hours) per week

## Our Team

- 4 instructors— 1 Art, 1 Comms, 2 Engg
- 16 coach positions—
  4 Art, 4 Comms, 8 Engg

# Class Experience

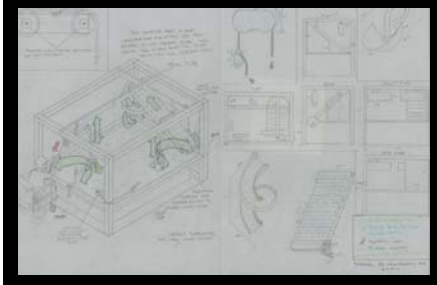


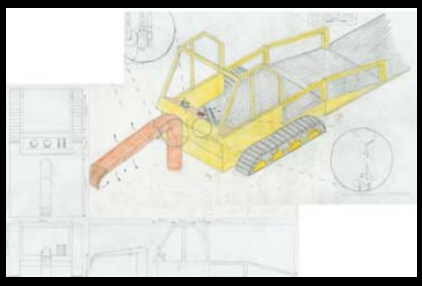

# Our Projects

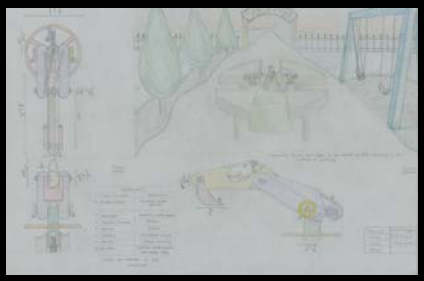
- Real-world, open-ended problems that focus on Environmentally and Socially Conscious Design & Design Education
  - Play Equipment for Children with Disabilities
  - Design for Sustainability
    - Multi-Function Platform
    - Water Filtration
    - Sanitation, electricity, housing and water supply in India
  - Safety Equipment for Community Skating Ovals
  - Automotive Safety Equipment
  - Medical Device Development

## EWB

## Sand Digger



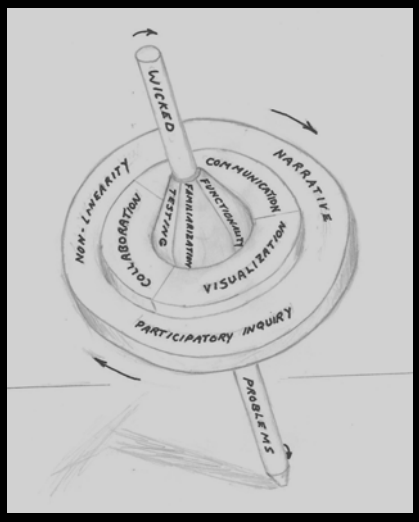




# Our Collaboration

- Engineering Design
  - Real World Experience
  - Design Trinity: Familiarization, Functionality, Testing
- Communication
  - The Writing Process
  - Professional Engineering documents
- Art
  - Paraline Projections
  - Projects Designed to Promote Visual Literacy

# Dynamics of Creative Problem Solving



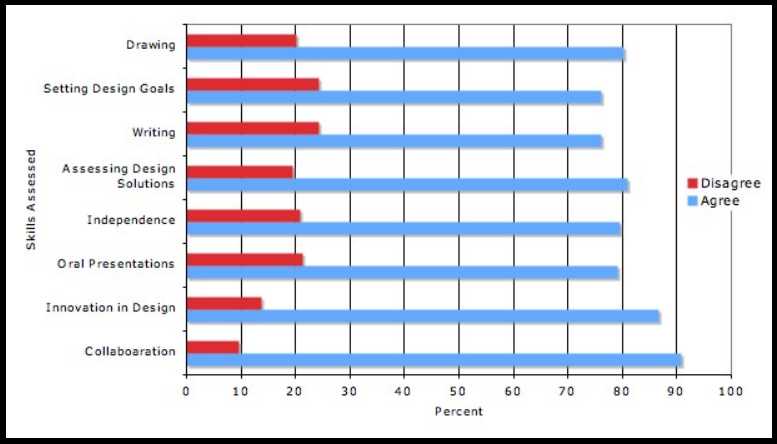
## Our Creative Problem Solving Environment

- Students use **narrative** to
  - Use their own intellectual resources
  - Learn how others think
- Set up real world, open-ended problems
- Have students perform, coaches respond
- Evaluate results based on justification

## The Student Experience

- Participatory Inquiry →
  - Ambiguity, Uncertainty, Frustration
  - Ingenuity & Intellectual Resources
  - Leadership/ Support
  - Visualization/ Conceptualization
  - Justification/ Critical thinking skills
  - Struggle & Failure → Success

# Skill Development




# A Truly Multi-Disciplinary Team

# The Results

North America Solar Challenge
July 2005

Best Rookie Team (first ever to finish)
Team Work Award
Spirit of NASC Award
Duct Tape Award

World Solar Challenge
September 2005

10th Place Overall
1st Place Production Class

# Our Successes

- 2004 Alan Blizzard Award For Collaborative Education
- 2004 PIC V Best Paper Award at ASEE Annual Conference
- STLHE Green Guide on Creative Problem Solving Accepted for Publication

Thank you to the ASME for honouring us with the 2005 ASME Curriculum Innovation Award

QUESTIONS?