SP.777
WATER JET TECHNOLOGY

Wednesday, May 4th

Presentation by:
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Class Instructors:
Ken Stone ~ Alea Teeters
Introduction

- Teaches water jet through service learning
- Combines **design** and **rapid prototyping**
- In third year

Freshly cut coffee tray base emerges from water jet (3.02.05)
OMAX Water Jet

- Uses high pressure water and abrasive to cut
- Works on metals, plastics, woods, etc.
- Has associated computer-aided drafting program

ABOVE: Snowflakes cut on water jet
LEFT: Ken teaches Ariel how to use software
Community Partner

- Protestant Guild for Human Services
  - Waltham, MA
  - “Serves difficult-to-place students between the ages of 6 and 22 years with a primary diagnosis of mild to severe mental retardation, autism, or other developmental disability.”

- Two site visits, including ideas generation session
Design Process

- Ideas development
  - Community partner interaction
  - Brainstorming and sketching
- Research
- Designing and engineering
- Iterative prototyping
- Product testing
- Surveying

Students use computer aided drafting programs to design products.
Coffee Cup Carrying Tray

- **PROBLEM**: Dunkin’ Donuts holder difficult to hold, subject to spills, and not durable
- **SOLUTION**:
Product Development

- Iterative design process
- General idea developed through several prototypes
Testing and Deployment

- First tests in mid-March
- No negative feedback received
- More durable model deployed in early May

James, a worker at the Something’s Brewin’ coffee shop, poses with the new product.
Cafeteria Tray Insert

- PROBLEM: Students would often spill liquids from bowls or cups on their way towards the table.
- SOLUTION:
Product Development

- Competing designs and final evaluation
- Perfecting new techniques such as bending and frosting

LEFT: Triangular alternate design

RIGHT: Greg bends tabs on straight design
Testing and Deployment

- Multiple copies of final product developed
- Deployed in early May

LEFT: Multiple copies of insert stacked together

RIGHT: Student uses tray in cafeteria line
Lessons Learned

- Using water jet effectively
- Finishing cut polycarbonate
- Bending

BELOW (left to right):
Process of finishing polycarbonate – routing, sanding, heating, bending
Questions?

LEFT: Thank you card from students

RIGHT: Laura uses coffee cup carrying holder