



SP.777
**WATER JET
TECHNOLOGY**

Wednesday, May 4th

Presentation by:

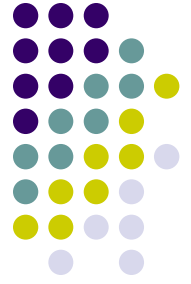
Greg Schroll ~ Ariel Rideout ~ Mike Short ~ Matt Zedler

Class Instructors:

Ken Stone ~ Alea Teeters



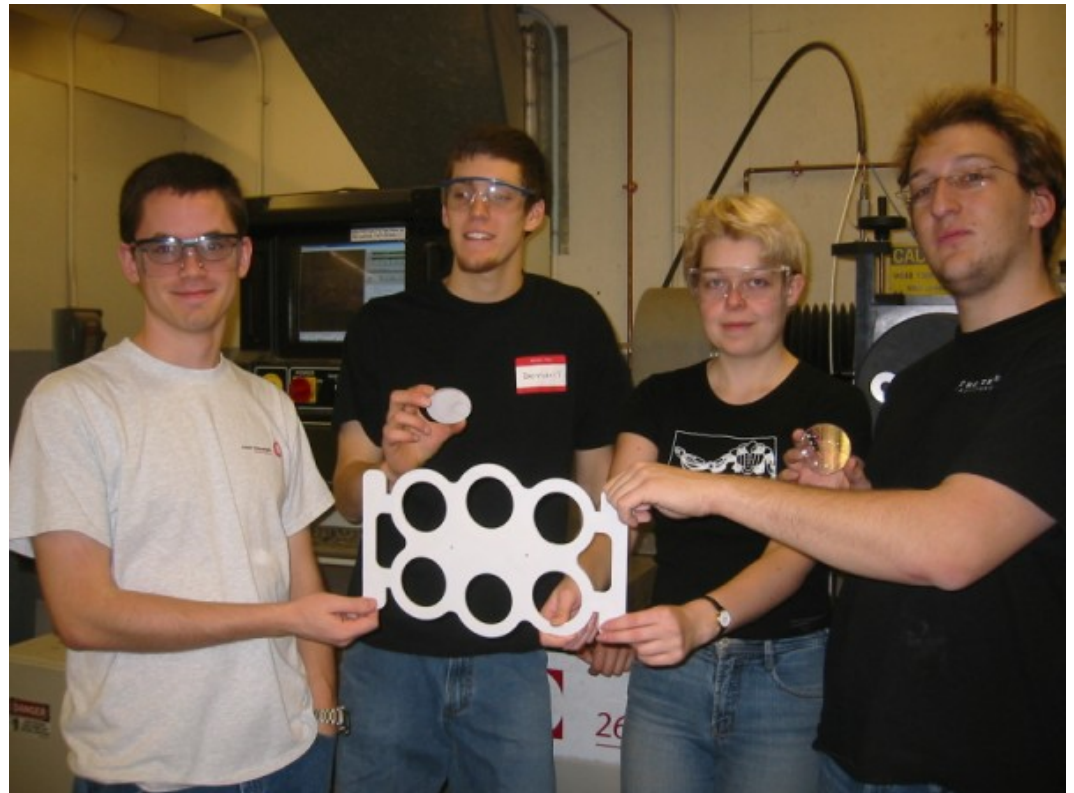
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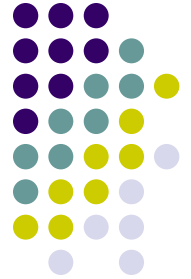
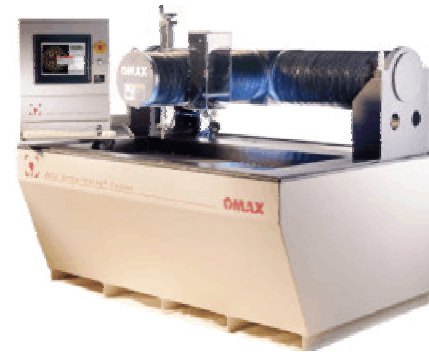
Introduction

- 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



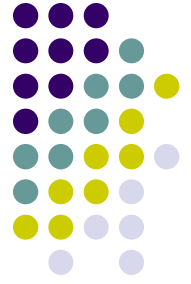
ABOVE: Snowflakes cut on water jet

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

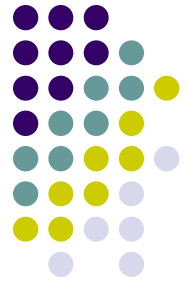


Design Process

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

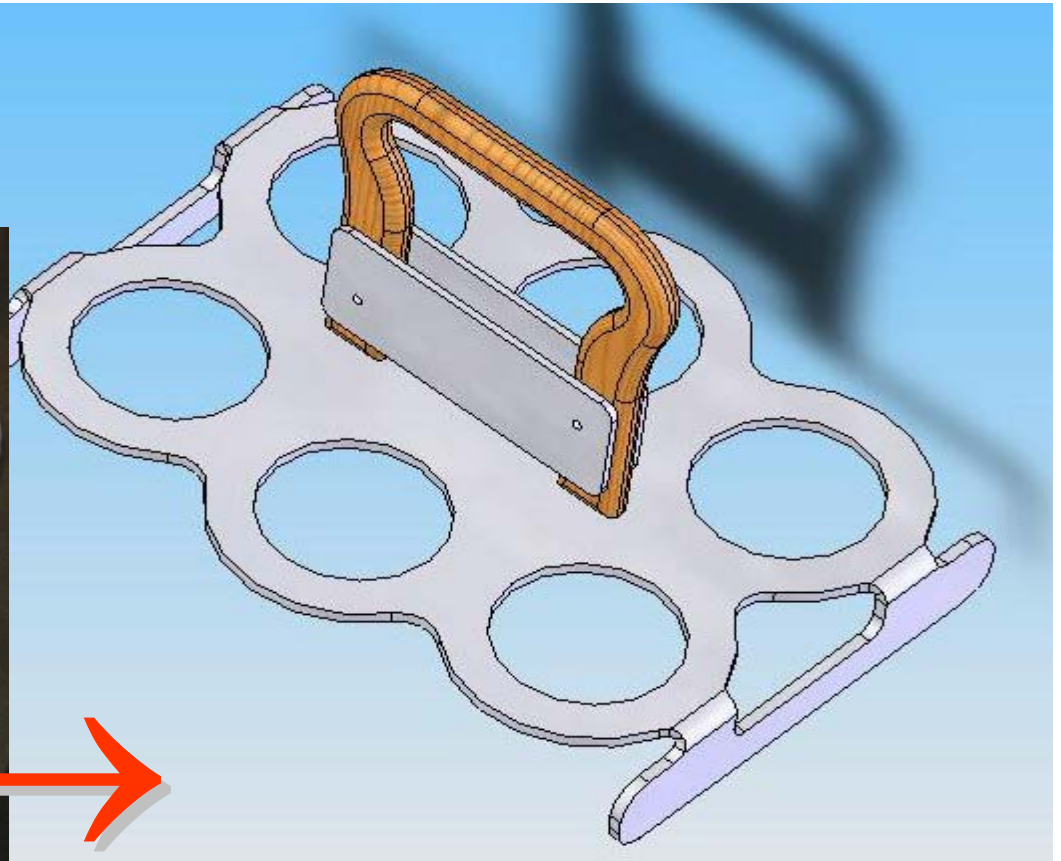
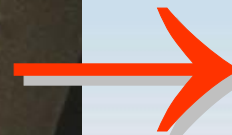
Students use computer aided drafting programs to design products.

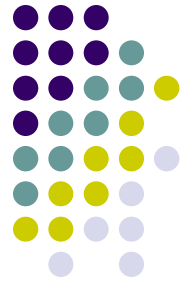




Coffee Cup Carrying Tray

- PROBLEM: Dunkin' Donuts holder difficult to hold, subject to spills, and not durable
- SOLUTION:

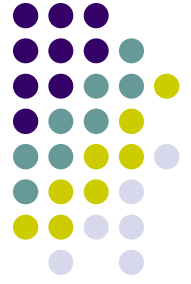




Product Development

- Iterative design process
- General idea developed through several prototypes





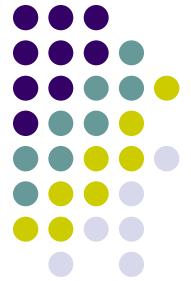
Testing and Deployment

- 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.

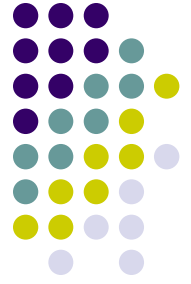




Cafeteria Tray Insert

- PROBLEM: Students would often spill liquids from bowls or cups on walk towards table
- SOLUTION:





Product Development

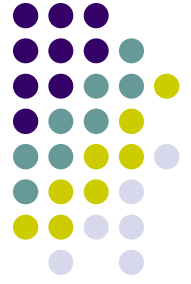
- Competing designs and final evaluation
- Perfecting new techniques such as bending and frosting



LEFT: Triangular alternate design

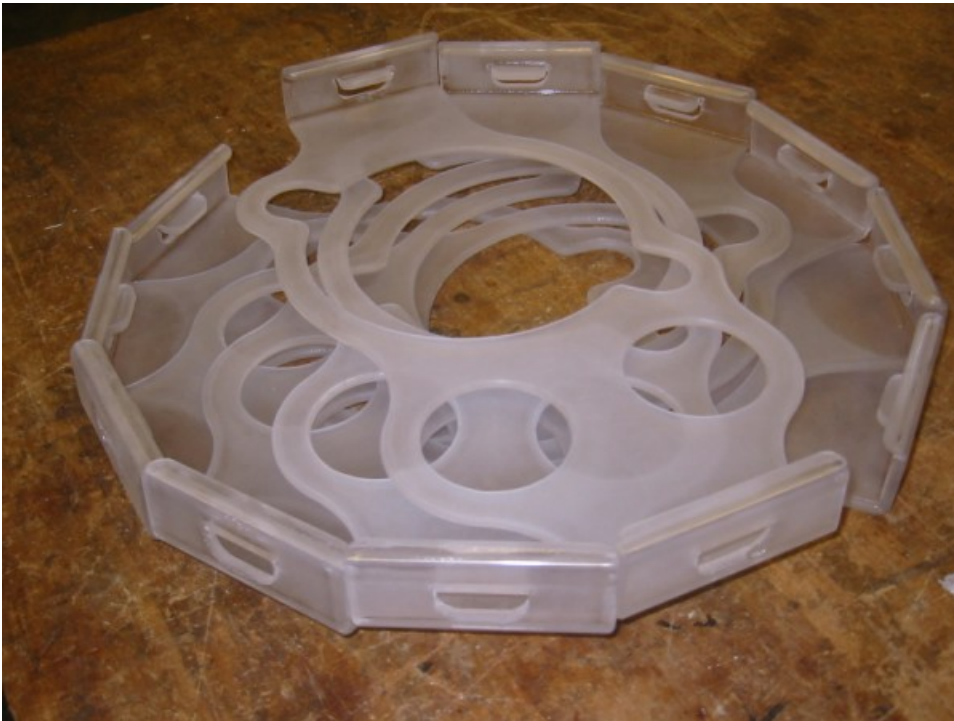


RIGHT: Greg bends tabs on straight design



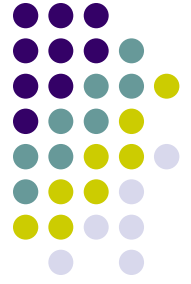
Testing and Deployment

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



LEFT: Multiple copies of insert stacked together

RIGHT: Student uses tray in cafeteria line

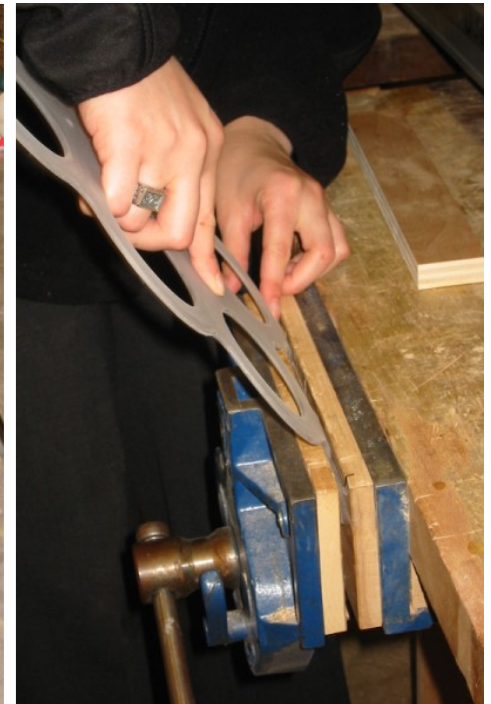
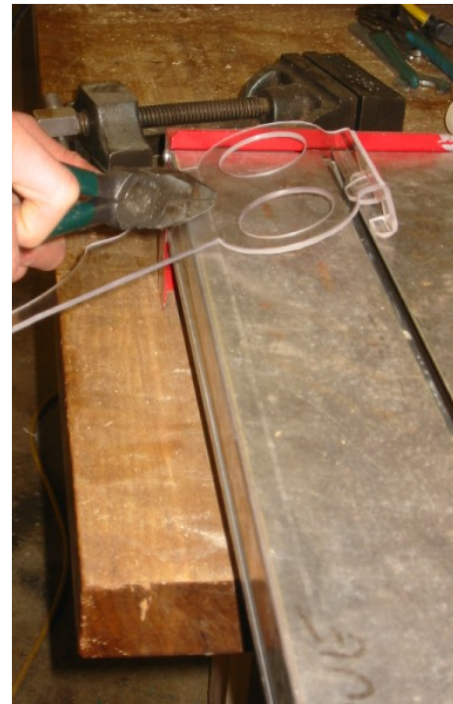


Lessons Learned

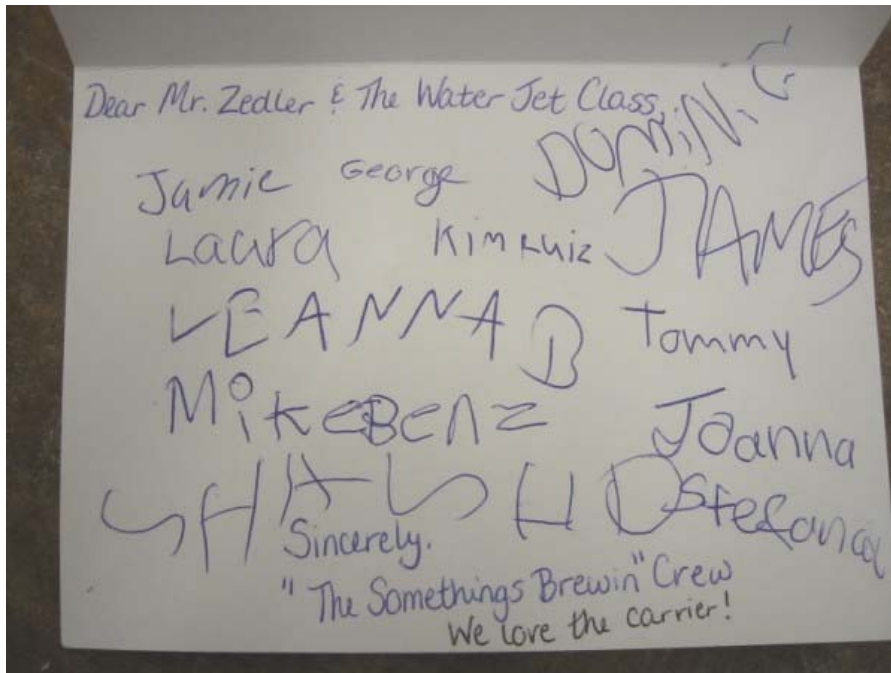
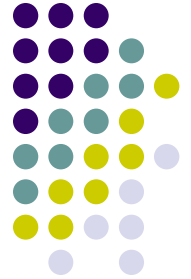
- Using water jet effectively
- Finishing cut polycarbonate
- Bending

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