

# Team #10: Interchangeable Play Panel System for Students with Autism

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## BACKGROUND

St. Lillian Academy is a private, Christian school that specializes in educating children with communication and learning challenges. Children on the autistic spectrum have different play interests than typical children their age.

## OBJECTIVES

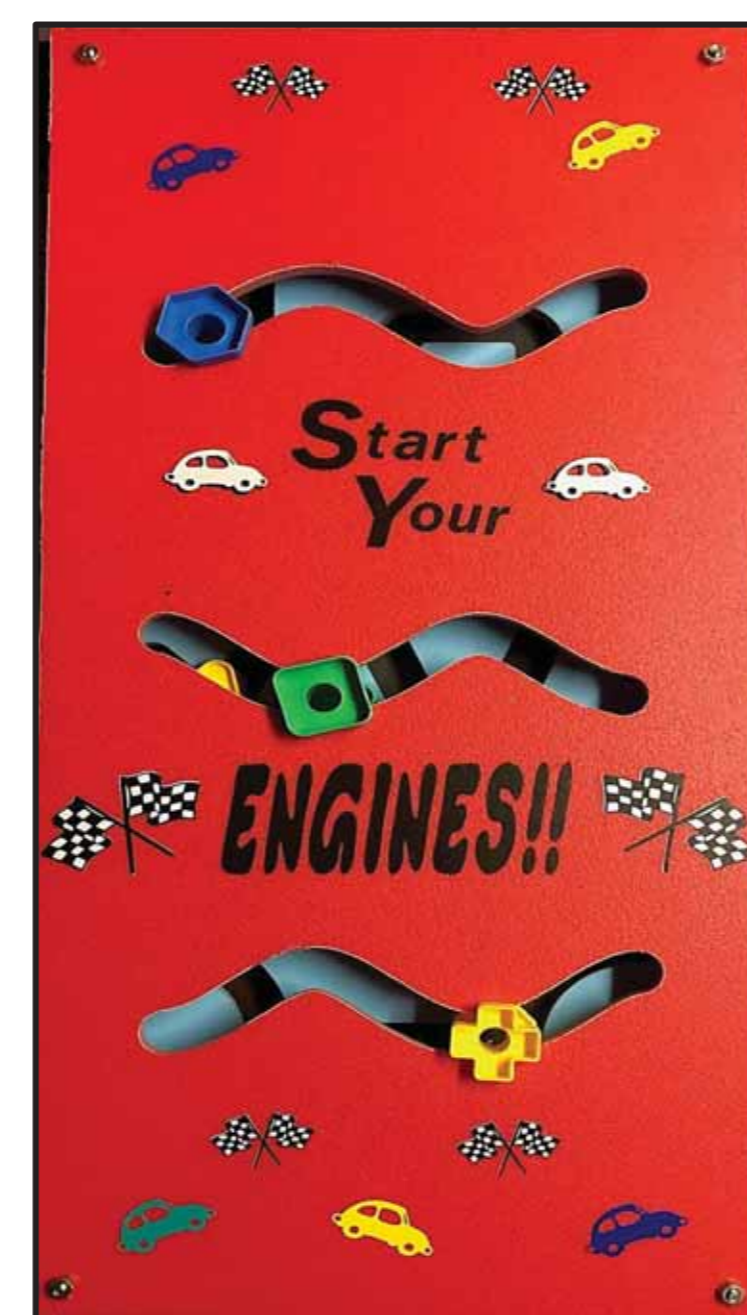
Create a lightweight structure capable of supporting variable, interchangeable panels that cater to the unique play needs of children on the Autistic spectrum.

## PROJECT SPECIFICATIONS

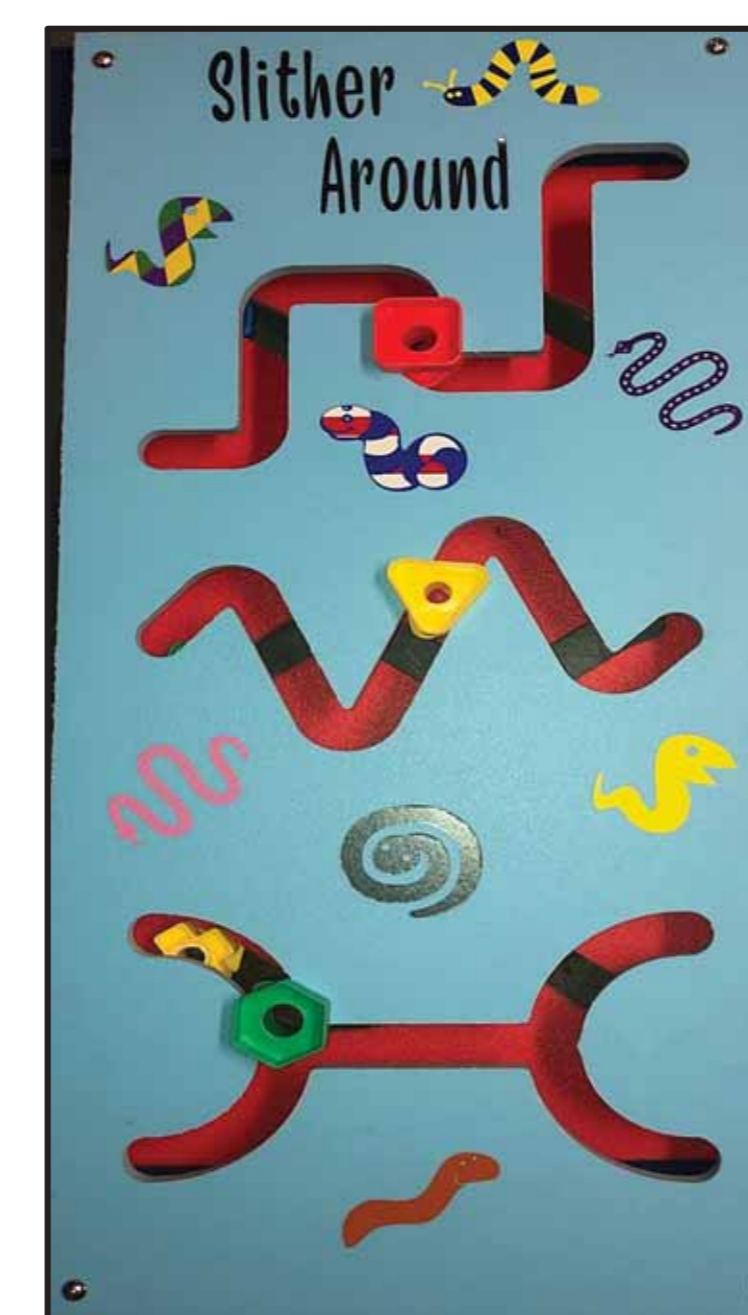
Test	Criteria	Test Criteria
Weld Strength	Robust	Weld beads survive both impact and transverse loading
Recess Observation	Enjoyment Lifespan	$t_{old\ equipment} < t_{new}$
Tipping	Safe	self-stabilize at tipping angles of 45° and lower
Heat Conductivity	Safe	<122°F
Impact	Safe and Robust	>1045 ft-lbf
Locking Test	Safe	40 lbf ⊥ to locking direction
Normal and Abuse	Safe and Robust	Scores 1 to 3.5 pts
Panel Installation	Interchangeable	<5 minutes



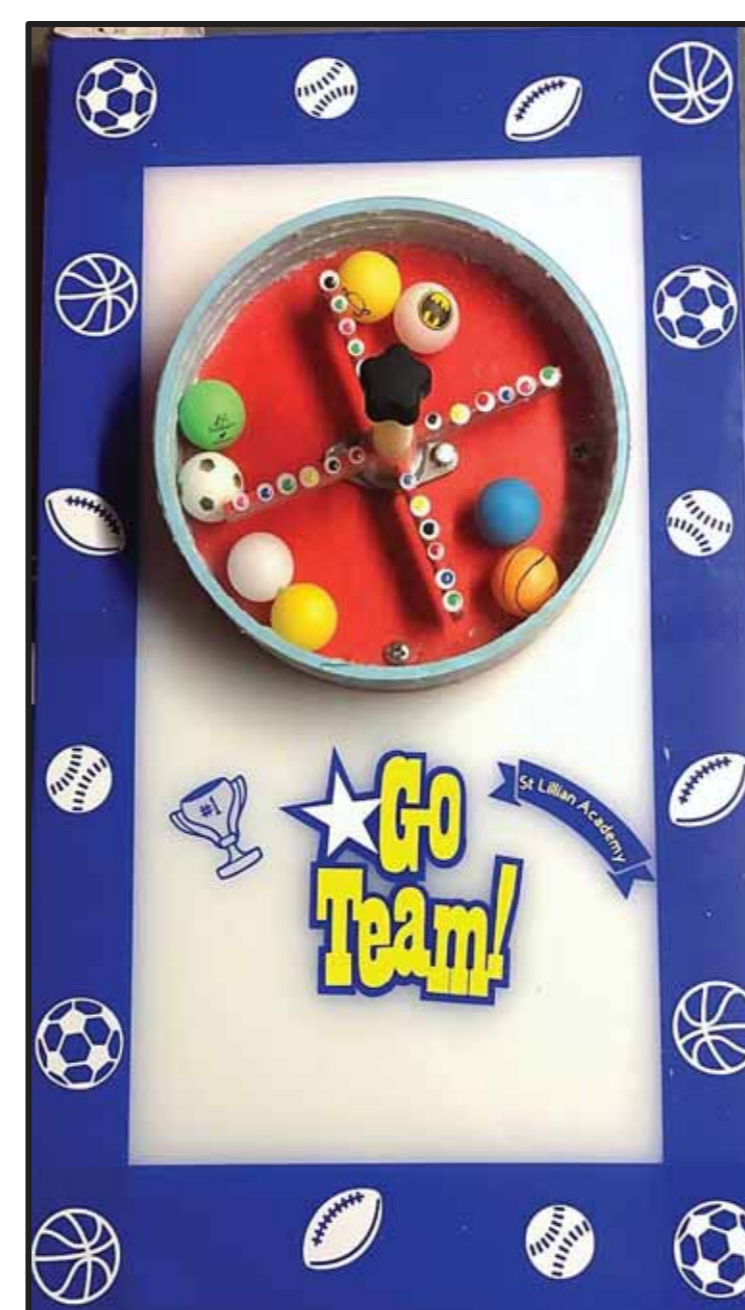
## SOLUTION



19 lbs



29 lbs



29 lbs

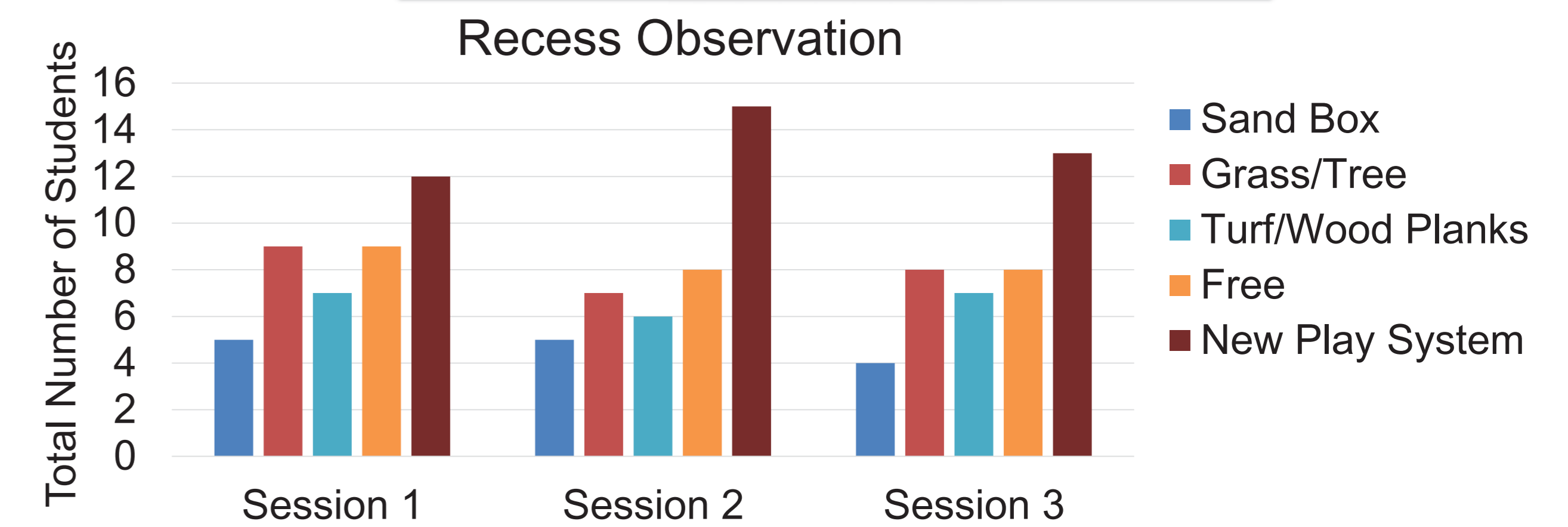


30 lbs

## SAFETY

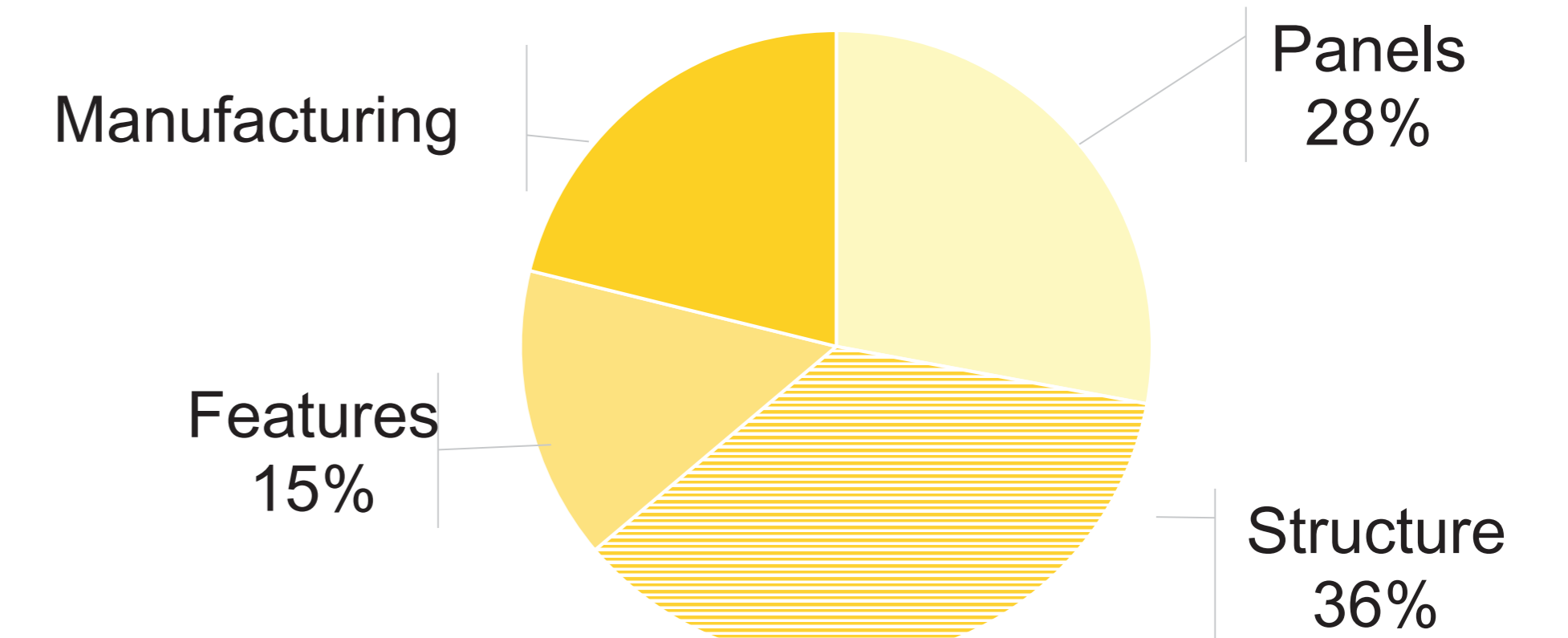
Shop Safety  
Safety glasses, respirators, long pants, ear protection  
Testing Safety  
Remove sharp corners, pinch points, and dangerous protrusions

## RESULTS



Average Time to Change Panel	47.25 sec
Impact Testing	8935 ft-lbf
Average Temperature	82°F

## BUDGET



Budget: \$5000

SEPT

Engineering Specifications

OCT

Concept Generation

NOV

Engineering Analysis

DEC

Design Modifications & Continued Analysis

JAN

Design Modifications & Order Materials

FEB

Order Material Begin Manufacturing

MAR

Assembly

APR

Testing & Delivery of Design to St. Lillian Academy

**Sponsors:**

Elissa McKenzie, Jack Rettig, Exxon Mobil, Savard Labor and Marine

**Advisor:**

Prof. AJ McPhate