



the stars
challenge

Science, Creativity, and
Experimental Design
Fall 2012



Up the stairs on Monday nights...
No more frisbees, no more light...

Building things that might get warm...
Make up classes due to storm...

iPad games to demonstrate...
data sets that fluctuate...

Logging data, crafting things...
Trials, errors, wondering...

All these things I will remember
from October through December
Then my mind may overhaul
But there are folks that I'll recall...

Jack (Jose') and Tyler ("T")
Madison, Ebbie and Bree
Aidan-1 and Aidan-lite
William (there on ev'ry night!)
Emmett, Christian and Tomas
Brother Daniel (a bonus) :-)
Rylan ("Ry-guy") Brandon, Shane
Devin, David - all these names...

...stuck with us (that's Matt and me!)
Wiser now, we guarantee.

Hoping our paths cross again - stay curious.
Mr. Roche




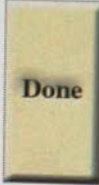
Mr. Roche and "Matt K, Amazing TA" are in disbelief when two Stars participants are left speechless in the opening night "Who is that?" tarp game.



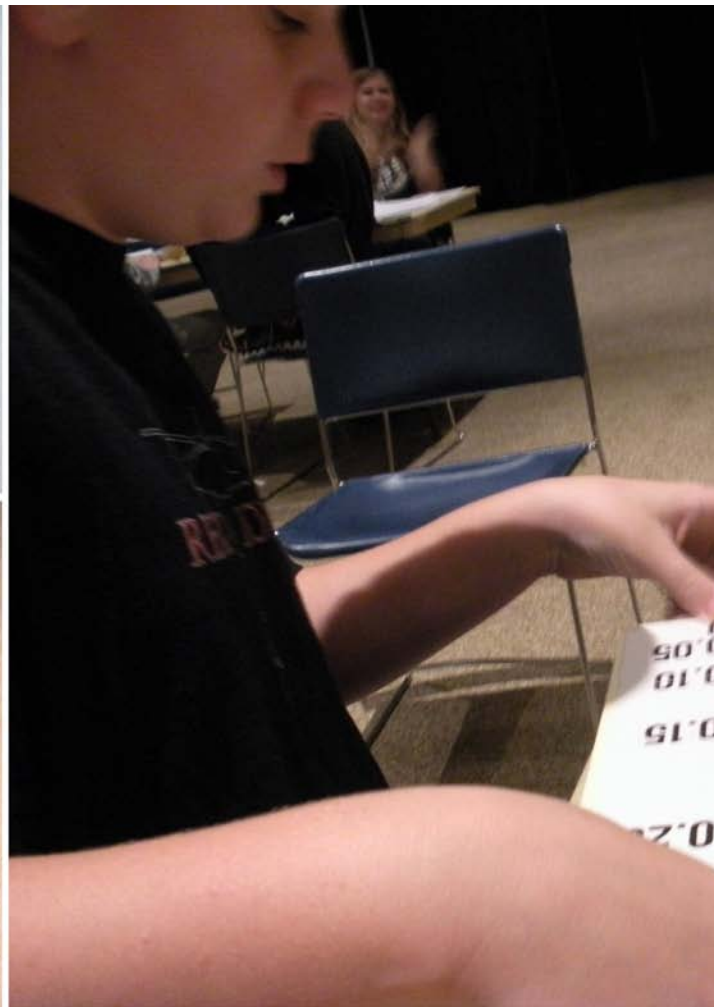
Who showed up without sneakers???



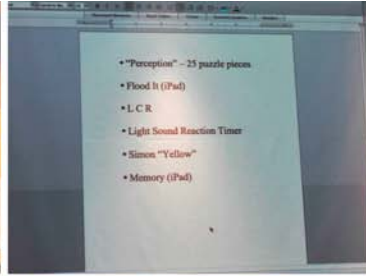
Looking for patterns in flying disk performance.

Test Number	Reaction Time	The stoplight to watch.	The button to click.
1	0.29		
2	0.282		
3	0.275		
4	0.265		
5	0.328		
AVG.	0.2880000000000000		
<input type="button" value="Start Over"/>			

	WINNER	LOSER	
0.6	Purple	Green	1.05
0.5	Yellow	Sidewinder	1.28
0.35	Orange	Blue	0.95
0.75	Hollow	Black	0.94



Performance measurements were not just made on inanimate objects.





Participants test themselves with apps and games, looking for other possible performance patterns.



Experimental Design Diagram

Title: Growth of Peas Plants at different conditions

Hypothesis: The type of water a plant is watered with will have no significant effect on its final condition.

Independent Variable	Solutions Used for Peas Plants		
Levels	Normal solution	Compression	Water
#Trials	10	10	10
Control Group?			Yes

Dependent Variable: growth of peas plants
 Operational Definition of DV: final condition of plants (g)

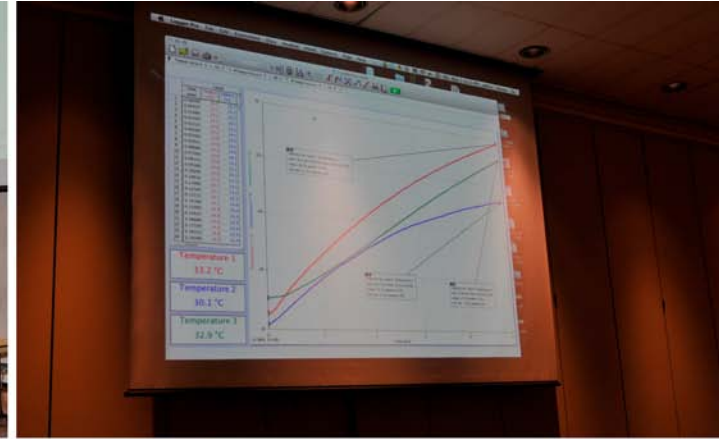
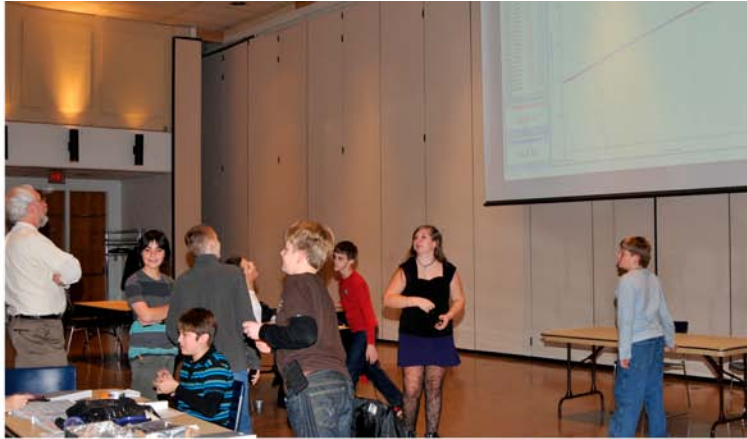
Control Group? Yes - 4 1/2 liter tapwater treatment (water) for 10 days (10 plants)

Conditions: temperature: constant (controlled by air movement) 20°C
 humidity: constant (controlled by air movement) 50%
 sunlight: constant (controlled by light)

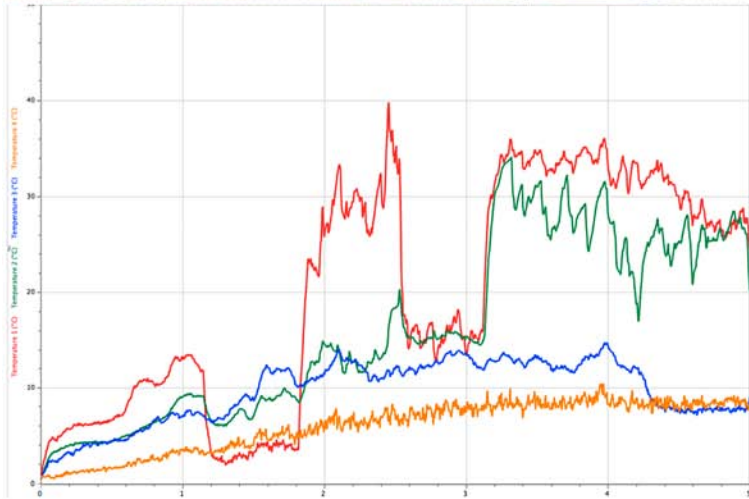
Hot or not? Participants get introduced to data logging software and sensors.



First prototypes of mini "solar" collectors being tested under incandescent light sources.



When the data is coming in every second, it's hard not to cheer for a favorite design.



One data set: a 5 hour trial with full scale models tested on a cold December day at HTHS.



Meeting with high school mentors / HTHS Experimental Research Group volunteers at HTHS.



Demo's involved behavior of both microscopic and macroscopic life forms.



A certain bearded subject still refuses to allow publication of the bat swing speed trials.



Cyber forensics as well as the traditional type...





Consultations and advice on experimental design.





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The Stars Challenge at Monmouth University