



Explore, Imagine, and Build

The Stars Challenge at Monmouth University 2011

Another Stars Challenge class filled with the wonders of science. This term the class investigated forces and their effects. We started the course studying inertia by trying to remove a dollar bill placed between two bottles without causing the bottles to fall over. The heavier the bottles the easier the task is because the bottles will have enough inertia to resist falling over. We then investigated how forces can overcome the natural tendency of objects to maintain their state of motion: the property called inertia. We studied centripetal force by making a water tornado in a bottle and whirling a container of water around our heads. By determining our jumping speed, we investigated work, which is produced by force acting through a distance. By running up a flight of stairs, we calculated our ability to produce power, which is work per time. By building a slow descent rollercoaster we furthered our study of work by investigating how work changes an object's energy. We continued our study of forces by determining how time affects forces by trying to break an egg by throwing it against a stretch sheet. We "hovered" for physics on a hovercraft to continue our understanding of inertia. We constructed balancing toy games to amaze our friends using the concept of torque, which causes rotation to occur. We studied how the force of gravity on different planets changes the weight of objects as compared to the Earth. We made a "physics toy" to demonstrate electrical forces to concluded our study of forces. Phew, the study of forces is a lot of work, but phun. May you continue in your enjoyment of science. And remember, "May the force be with you"!

Mr. Valente



The group really enjoys to “swing” for physics!



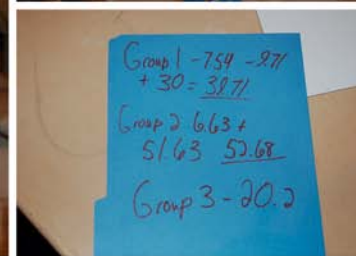
Andrew proves that it is possible to swing a bucket of water around his head without any water spilling out. Nick tries to use the same law of physics to swing a penny balanced on a hanger around his head without the penny falling off.



Evan makes a tornado in a bottle. Andrew tries to remove the dollar bill without causing the bottles to fall over. Bethany plans her strategy.



Bethany and Andrew express their love of physics and the Stars Challenge.



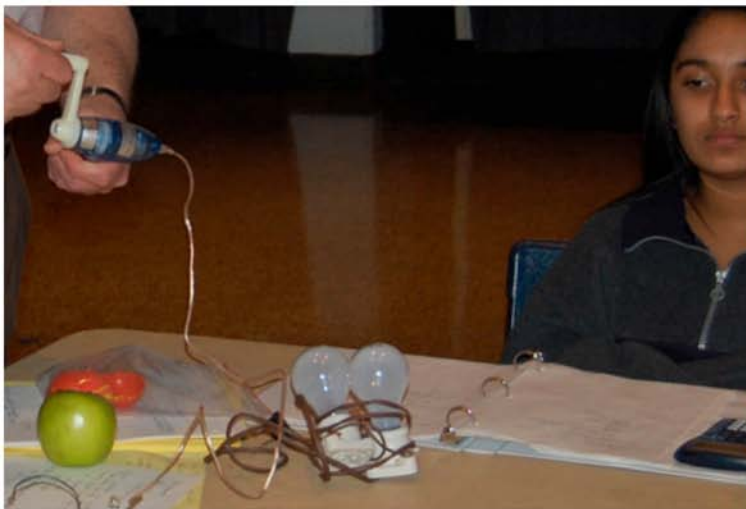
Viraj & Bethany know that they have the winning design for the slow roller coaster competition.



Nick and Andrew think they have the girls beat. Nolan and Jack plan their design.



The class tries to determine which track enables the ball to travel the greatest distance. Nolan tries to determine his jumping speed.



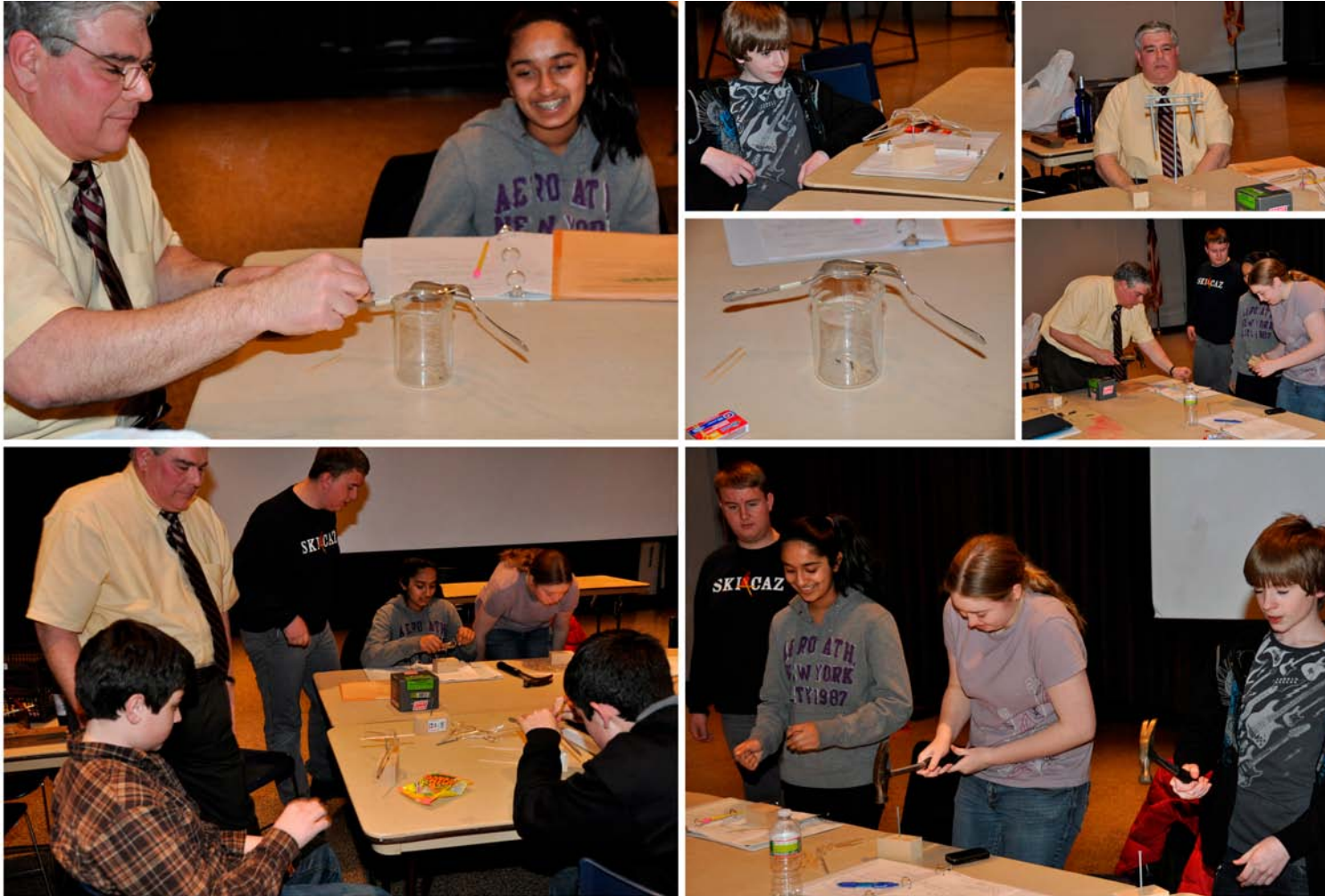
Both Noland and Viraj run up the stairs to determine their power output.



Jack tries to break an egg by throwing it against the sheet. Andrew admits defeat!
Both Bethany and Andrew enjoy a ride on the hovercraft.



Jack really enjoys to “hover” for physics!



Mr. Valente amazes Viraj with the balancing fork and spoon trick. Teaching assistance Nick Heins helps Viraj, Bethany and Nolan build their balancing nail trick.



Nick Heins helps Jack build his balancing Santa toy.



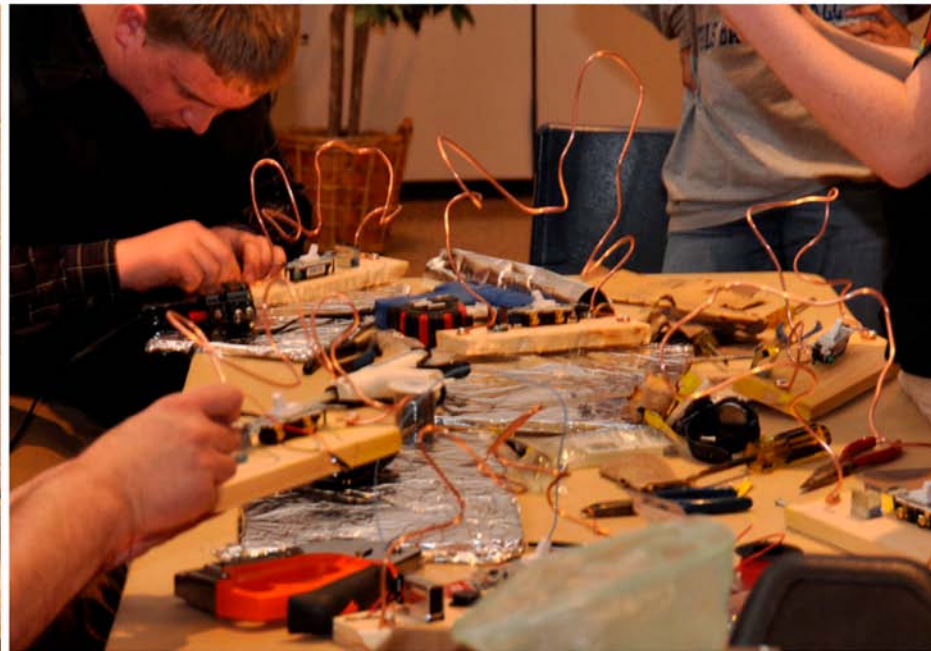
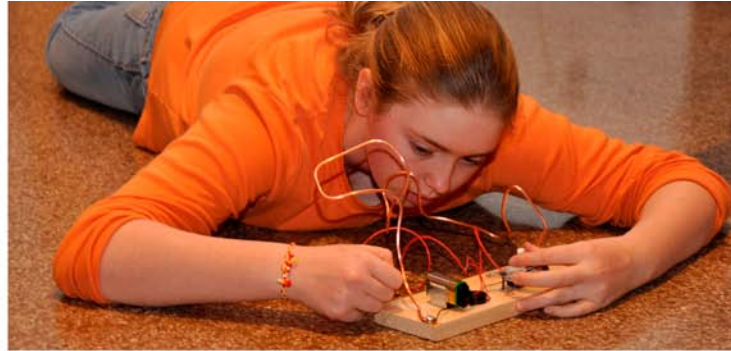
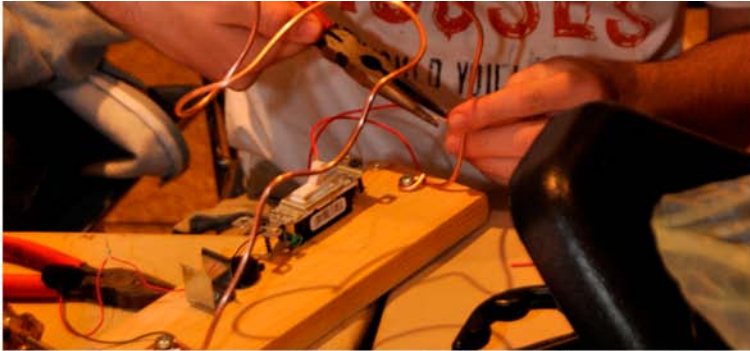
Andrew and Nolan put the finishing touches to their balancing Santa toy.



Viraj watches, tries and succeeds to balance the spinning wheel on the rope.



No, the class is not playing in the sandbox. They are weighting bottles with sand to determine how much objects will weigh on different planets. Evan is "feeling" how much a soda bottle would weigh on the planet Jupiter.



Evan and Bethany build their electrical game challenge. They are eager to challenge their friends to get the ring around the loop with out making the buzzer sound.



Evan, Bethany and Nick construct their electrical game challenge.





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