

## Annual Physics Fun Day

May 26, 2011

The Marsh White Award funded the annual Physics Fun Day, May 26<sup>th</sup>, 2011 at Lea Hill Elementary in Auburn, Washington. The outreach team consisted of Vi Tran, Brent Gilbertson, Luke Tollefson, Chris Roeckers, Pramudita Andarasti, Chad Garrison, Eddie Fish and their advisor Dr. Ajay Narayanan.

The event lasted an hour and a half and was staged in the school gymnasium. In an attempt to increase participation from the children and their families at the school, the team tried a unique evening time slot, but unfortunately, attendance was lower than anticipated due to competition from other elementary school events that were scheduled the same evening. This event highlighted many areas of physics including electricity, waves and wave motion, atmospheric pressure, inertia, and angular momentum.

Electricity demonstrations included the use of a Van De Graff generator and a bucket capacitor. Students loved the flying pie tins and the standing hair demos with the Van De Graff generator and were very surprised by where the charge was stored on the bucket capacitor. There were many ohh's and ahh's when the gym lights were turned off so that the students could see the electricity arcing from the Van de Graff generator.

Wave motion was demonstrated through the use of a long spring under tension and shaken by hand, a string set up on an oscillator and by breaking a wineglass using sound. The long spring and the string attached to the oscillator each created standing waves that the students could count. A great reaction from the students and parents came when the gym lights were again turned off and by using a strobe light the waves on the oscillating string appeared to freeze or move in "slow motion."

Perhaps the most fun and interactive demonstrations were with atmospheric pressure and expanding gasses. Students were able to play with suction cups, "rubber poppers", and levitating a ball with a blower. The students were wowed by the alcohol powered bottle rocket and our clear improved vacuum cannon that shot a ping pong ball through an empty soda can and a cardboard box. The soda can was left with a gaping hole in the middle and the students cheered the destruction!

The fundamental concepts of Inertia were demonstrated using a lead brick and a hammer. Eddie was used as the guinea pig while Vi struck the lead brick with all her might. This was explained as the "how physics students work out disagreements." Eddie was unharmed much the surprise and delight of the crowd.

A bicycle wheel and a rotating platform were the center pieces of the angular momentum demonstrations, controlling the rate and direction of spin while standing on the platform using only a spinning bicycle wheel held out at arms' length.

Also, changes in state of matter were highlighted with Liquid Nitrogen demonstrations. Students and parents alike delighted in the freezing and smashing of household items like flowers,

marshmallows and the clouds of vapor covering the gymnasium floor. Students and parents were shocked and awed by the “freezing” and smashing of Chad’s “thumb.” Chad pretended to freeze his thumb in the liquid nitrogen saying that it wasn’t cold and then to prove that it wasn’t frozen smashed it with a hammer. It shattered and then some perceptive students exclaimed that it had to be a hotdog in a glove not Chad’s actual finger. There were a lot of laughs when Chad’s finger “magically” grew back.

Several weeks before the event, several SPS members gathered for a goodie bag stuffing marathon. Almost 100 bags were assembled, each containing a pair of rainbow glasses, two magnets, three balloons, a handful of straws and a hand-made bracelet of “mystery beads”. These bags were handed out to every student in attendance and there were plenty of left-overs to be used at future events. The students weren’t told that the “mystery beads” were actually UV beads that change color in UV light, it was left as a puzzle for them to figure out on their own. They were also challenged to find fun things they could do with the straws and balloons.

The Lea Hill Physics Fun Day event was made possible by the efforts of the Green River Community College Society of Physics Students and their advisor. Special thanks to the Society of Physics Students, Sigma pi Sigma, and the Marsh White awards committee without which GRCC SPS could not have helped to inspire a new generation of students.

Award funds were used as follows:

Rainbow Glasses	\$89.74
UV Beads	\$68.88
Magnets	\$75.94
Liquid Nitrogen	\$38.75
Total	\$273.31



Brent and Luke demonstrating angular momentum. Wweee!



Ajay demonstrating momentum sticks.



Principal Herda enjoying the effects of angular momentum.



Chad demonstrating the Van de Graaf generator. Godzilla likes electricity!



Vi and Brent showing off the hole in the soda can! There's one in the cardboard box too!