

MARSH WHITE AWARD
FINAL REPORT

Phalcon Physics Hovercraft
University of Wisconsin - River Falls SPS Chapter
Centennial Science Hall 522 S. Sixth Street River Falls, WI 54022

Amount of Money Requested
\$170
May 18, 2010, 2009

Mitch Andrejka
Student Compiler

Dr. Earl Blodgett
SPS Adviser

The SPS Chapter at UW-River Falls built an electric one-person hovercraft to be used in demonstrations for various schools, prospective students, and the community. It was built with a leaf blower for the motor, a four foot diameter piece of MDF as the platform and a tarp for the skirt.

Originally, our hovercraft was made with a 3' diameter circle of plywood with a shower curtain as the skirt. Because the platform was so small, it was a bit unstable. Also, the plywood warped. To remedy this, we increased the diameter to 4' and used MDF to prevent warping. Another problem with the prototype occurred when the hovercraft was turned on; it would make a very loud humming sound. We believe this was from the skirt vibrating in the air flow. In an attempt to resolve this, we used a tarp with a higher density which hopefully would vibrate differently. We also put duct tape on the bottom (as seen in figure 2) in order to dampen the vibrations. Lastly, duct tape was placed on the tarp where the holes would be cut in order to reinforce the holes the air flows through. The basic plans for this were taken from www.amasci.com/amateur/hovercft.html.



Figure 1: The top of the hovercraft. The leaf blower is directed into a hole in the platform in order to inflate the skirt



Figure 2: The bottom of the hovercraft. The holes in the middle are where the air escapes to inflate the skirt and the duct tape dampens the vibrations of the skirt.

The first opportunity for us to unveil our new hovercraft was on April 29, with a group of 28 7th graders in a program called Gear Up and Get Ready which encourages young people to go to college. This event was also covered by the local news station KARE 11. We even gave the news reporter a ride on the hovercraft! During the demonstration, we explained how a hovercraft worked and then showed a few of Newton's laws. To demonstrate the third law, we had the person sitting on the craft throw a bowling ball and observed as they moved backward from the force exerted on them by the ball.

That same day, we incorporated the hovercraft into a presentation for about 100 middle school students on a “get excited about college” visit. We also took the hovercraft to a local high school physics class on May 25, it was a big hit, even though the Principal declined to ride it.

There are many different demonstrations we can present with the hovercraft and it will certainly become a staple in our demonstrations for years to come.

Itemized Expenditures

Toro Leaf Blower 51599	\$80
100' Extension Cord.....	\$30
Plywood/MDF.....	\$25
Skirt Materials.....	\$10
Misc (screws, staples, plastic sheet, etc).....	\$15
Total.....	\$160
Amount Received.....	\$170
Difference.....	\$10



Figure 3: Using the hovercraft at its very first demonstration