

## Marsh White Award Summary

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### Members Involved

Jake Wietting (APOP President)  
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### Summary

In the winter of 2007 our Augustana Physics Outreach Program (APOP) received a grant of approximately \$300 to be used to create an Interactive Acoustics Demonstration. The money was spent on several items that were taken to local elementary schools and children were taught of the wonders of Sound and Energy. The items purchased are as follows: Resonation Chamber (\$95), Boom whackers (\$55), 2 harmonic Singing Bowls (donated), a Super Slinky (\$21), and an Open Dewar (\$116).

The Resonation Chamber consisted of a 5 foot long, 3 inch diameter clear Plexi glass pipe, with a handful of Styrofoam pellets thrown in. When a frequency with a wavelength equal to a multiple of the pipes length is resonated within the chamber (one end capped, speaker on the other end) the foam pellets line up in the high energy areas making it easy for children to see the nodes.

The Boom Whackers are a set of musical plastic tubes. There are 8 tubes; each one produces a different frequency when struck. They are very durable and are a great way to show children how sound resonates in a pipe/tube, and how different sounds can harmonize with each other.

The Singing Bowls are durable, reliable tools to show resonance and harmonics within a physical structure. By manipulating the way each bowl is held, different frequencies can be attained.

The Super Slinky is a great way to show longitudinal and transverse waves. It allows the demonstrators to show both types of waves, and show how any wave moving through a material can produce a sound.

The Open Dewar is used to preserve Liquid Nitrogen while demonstrating. The Liquid Nitrogen demonstrations are used to help relate Sound Energy to Thermal Energy. This Open Dewar has helped to greatly reduce how often we must purchase Liquid Nitrogen and the children love to see the Liquid Nitrogen NOT boiling.

Over the past 10 weeks our group has done 16 demonstrations and none of them would have been possible without the generous grant awarded to us. Elementary School Teachers and especially the children are very grateful and hope to have us back in the future. APOP thanks the SPS for granting us this opportunity and hopes to be given the same opportunity next year.