Wind Turbine
Lesson Summary

Intended Audience

- *This project is targeted towards children in grades 4-8.*

Time Required

- *The total time needed for this project is approximately 45-60 minutes.*

Prior knowledge

- *Students will not need any prior science knowledge.*

Learning Standards

- *This lesson achieves all learning standards involving energy transformation, such as standards 12.C.1a and 12.C.2a.*

Objectives

- *Topics intended to be taught*
  1.) *Power generation and the importance and applications of renewable energy sources.*
  2.) *The basics of aerodynamics (lift, drag)*
- *Methods of teaching*
  1.) *Short, hands on lecture about energy and how wind turbines work*
  2.) *Demonstration with our pre-fabricated set of turbine blades*
  3.) *Interactive portion where students build their own set of turbine blades out of various materials and mount them to our turbine stand. This can involve a friendly competition between students to see whose set of blades can generate the most power.*

Agenda

1. *Opening discussion on the importance of renewable energy (5 minutes)*
2. *Presentation on wind energy and renewable resources (15-20 minutes)*
3. *Demonstration with model wind turbine and show how even at a small scale it can produce usable energy (1 minute)*
4. *Split students into teams and have them design and make their own set of turbine blades (10-15 minutes)*
5. *Contest (10-15 minutes, depending on class size)*

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6. *Follow Up/Question and Answer Session(10 minutes)*

Intended Results

- *It is intended that students take away from this outreach endeavor an understanding of the importance of renewable energy and the growing availability and implementation of wind turbines.*

Future Learning

Resources for independent student research for more information on wind energy:

- http://windeis.anl.gov/guide/basics/
- http://www.awea.org/
- Students can also go to their local library and look for any information regarding wind turbines, wind energy, or renewable energy.