



# Dancing in the Wind! Making Music with Wind Power

Cedar Ridge Elementary 4<sup>th</sup> and 5<sup>th</sup> Graders<sup>1</sup>; Mr. Tyler Simmons<sup>1</sup>; Mr. Logan Decker<sup>2</sup>  
 1-Cedar Ridge Elementary School, Columbia, MO (Mr. Simmons, teacher); 2-University of Missouri, Division of Biological Sciences



## Introduction

### The goals of our mini-grant study were to:

- ◆ Become better learners about energy that we use at Cedar Ridge
- ◆ Find out how much electricity our classroom uses
- ◆ Learn how we can use less electricity
- ◆ Find out if wind power is possible for our school
- ◆ Use the money from our mini grant to make and study wind power

### During our mini-grant study, we did experiments to:

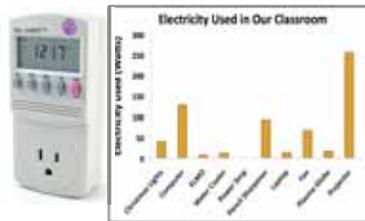
- ◆ find out how much electricity different things in our classroom use
- ◆ learn which type of shape is best for a wind turbine blade
- ◆ learn how to make and use a scientific instrument called an anemometer
- ◆ measure wind speeds at locations on our Google Earth map and discover which one is the windiest

With our mini-grant, we plan to purchase a wind turbine that will power a music speaker for our playground



## Electricity used in our classroom

We used our Kill-a-Watt to find out how much electricity different things in our classroom use.



## Wind Speeds at Cedar Ridge



We made anemometers out of wood, plastic cups, tape, and rubber bands and used these to measure wind speeds around our school in revolutions per minute (RPM).

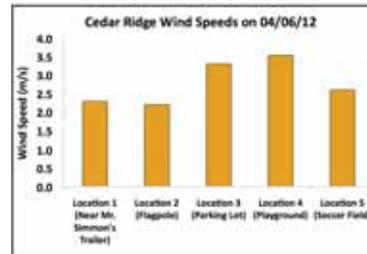


We used our handheld anemometers to measure wind speeds in meters per second (m/s). Our Google Earth map shows all the locations around Cedar Ridge we want to measure.

### Experimental Question:

What is the windiest place around Cedar Ridge?

**Hypothesis:** The soccer field (location 5) will be the windiest place around Cedar Ridge.



Acknowledgements: Mrs. Schuttler, Mrs. Mazzocco, Mrs. Eaton, Dr. Cerry Klein, Dr. Candi Galen, Dr. Anna Waldron, Dr. Deanna Lankford, Dr. Nicole Miller-Struttman, Cedar Ridge Elementary Faculty and Staff

## Weather Station

We use our weather station to measure weather every day at Cedar Ridge. Our weather station records rainfall, temperature, humidity, and air pressure. Also, it tells us the wind speed and direction outside of our classroom.



Example Weather Data from 04/06/2012 at 11:46 am

Inside temp 21.6°C  
 Outside temp 13.4°C  
 Wind direction South  
 Rain 1.01 in = 2.5654 cm

## Wind Turbine Designs

### Experimental Question:

How does changing the shape of the wind turbine blade affect how much electricity is made

### Independent Variable:

Shape of the wind turbine blade

### Dependent Variable:

How much electricity is made

### Constants:

Distance from fan or wind source (30 cm), speed on fan (all done on max speed), same material for turbine blades, same amount of time to work, same tape, same cork, same motors, same paper clips

