

Technology Education  
**Energy & Sustainability**  
**Wind Turbine Design & Build Lab Activity**  
French / Law / Metz / Tschorke

**I. Topic/Project:** Design and Build the Blade system for a model Wind Generator

**II. Instruction Time:** 3 Periods

**III. Goal of the Activity:**

1. To learn about various wind turbine blade designs.
2. To learn the relationship between shaft speed and generated voltage.
3. To gain skills in operating appropriate tools and machinery in the construction of your turbine.

**IV. Problem:**

To research, design and build a operating model wind turbine blade system. You must work to the following limitations and parameters.

**VI. Parameters:**

1. Work with a partner
2. You must construct your turbine on a 1/4" shaft (or minimally a 1/4" shaft end) to interface with our generator
3. You may use any materials available or things you bring in.
4. You must use our wind source but may place your turbine anywhere in the wind stream. The wind stream output is 2" x 2" however your blades could be slightly larger.
5. You may design a horizontal or vertical shaft turbine.
6. You must record a steady voltage reading

**VII. Assignment:**

Spend some time researching various turbine blade configurations to better understand your options. Select a "best option" for you or better yet sketch out an original blade design. Keep the parameters of this project in mind. Construct an operating model paying attention to balance and quality construction. Test out your model and rework if necessary.