



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

Name(s) Stacey Jung; Dalia Khammash	Project Number J0910
Project Title Wind Energy	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals In my project, I used motors and fan blades turned by wind to generate energy. For my first variable, I tested different motors and saw how adding gears would affect the amount of energy generated. For my second variable, I used two and four blades attached to a motor and determined which is the most efficient to use while generating energy. While testing these two variables, I determined the optimal resistance (load) to use. To put my findings to work, I attached a motor, blades, and LED lights to a large 69" x 69" box kite and watched the lights turn on by the spinning blades and motor.</p> <p>Methods/Materials In my project, I used a DC Motor without gears, a DC Motor with gears, a drill with 750 RPM, resistors or sum of resistors with 1 ohm, 4 ohms, 7 ohms, 15 ohms, 30 ohms, and infinite resistance, wires, a wire stripper, a Volt Meter, "Electricity Learning Lab Kit," a fan with two blades, a fan with four blades, and an electric powered fan (to test the blades).</p> <p>Results Due to my experiments, I have concluded that Hypothesis A was correct, but Hypothesis B, however, was proven incorrect. Just as I had predicted, when I added gears to the motor, it generated more power than without gears because there was more RPM. When I tested the geared motor with both two and four blades, I determined that my hypothesis was incorrect. Previously, I assumed that four blades would be the least efficient because of the addition of weight. However, I learned that it turned out to be more effective because there is more surface area, which means there are more blades to catch the wind and help the blades spin and generate energy.</p>	
Summary Statement In my project, I tested a motor with and without gears, tested the efficiency of different numbers of blades, determined optimal resistance, and later attached a motor, LED lights and gears to a box kite to generate energy through the wind.	
Help Received Professor Mustafa Khammash at UCSB mentored my project and helped answer some of my questions on mechanical concepts.	