CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY

Name(s)
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Project Number
J0105

Project Title
I Believe I Can Fly

Abstract

Objectives/Goals
The objective of my project was to determine which propeller pitch produced the most thrust in a static setting, and I believed that the steepest pitch would produce the most thrust.

Methods/Materials
Five propellers of identical brand and length, were obtained. The propellers were identical except for the pitch which varied sequentially from four to eight inch pitch. Each propeller was attached to an electric motor and the thrust was measured. This process was repeated four times for each propeller, and the results were averaged. Due to the low thrust output of the propeller, and the limited sensitivity of the scale, a test apparatus was designed to leverage up the thrust and counterbalance the weight of the motor.

Results
The propeller with the five inch pitch produced the most thrust by a large margin, while the propeller with the eight inch pitch had the lowest thrust.

Conclusions/Discussion
Propeller pitch has a great impact on thrust, and the largest pitch does not necessarily produce the most thrust. My research indicated that thrust from a propeller of a given pitch will vary with the speed of the surrounding air. Therefore, the pitch that produced the most thrust in this static test would not necessarily produce the most thrust on a moving airplane.

Summary Statement
My project is about measuring thrust of identical propellers with varying degrees of pitch.

Help Received
My grandpa sent some sources, my dad helped me interpret these sources and helped to design the apparatus.