CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)
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Project Number
J0713

Project Title
How Do Different Batteries Affect the Power of a Simple Motor?

Abstract

Objectives/Goals
My goal is to determine what effect various batteries have on a simple motor. My theory is that this will be decided by their various voltages and current outputs. It will also need to be determined which battery offers the best performance overall with respect to factors such as coil weight and size, battery voltage or current on our simple motor.

Methods/Materials
This project begins with the construction of a simple motor consisting of magnets, a coil of wire, and different batteries. The motor works by placing a magnet under the coil of wires. When electrical current is then passed through the wire, a magnetic field is created around the coil which is repelled by the magnets under the coil and causes the loop to flip over. The wire is only stripped halfway so that the wire loses electrical contact once it completes this half turn. The inertia of the first turn helps it complete a rotation. This then repeats the cycle and henceforth the coil spins. This simple motor is then powererd by different batteries with various voltages and currents. The C, D, AA, AAA, 6V and 9 V batteries were used. The amount of turns resulting from the spinning was then counted by an odometer.

Results
The 6V battery proved to provide the greatest power and henceforth turned the coil on the motor the fatest. The AAA battery provided the least amount of power.

Conclusions/Discussion
Based on the data collected the 6V battery optimized the motor's performanace compared to all the other batteries. Voltage alone did not win this contest, as I had initially suspected. It was the combined product of current and voltage. This is why the 6V beat out the 9V battery and also why the 1.5V D battery beat the 1.5V AAA.

Summary Statement
Project is about construction and theory of simple motors and relationship of voltage and current with respect to power.

Help Received
Father helped with electrical connections and mom gave suggestions for layout of board.