

**WATER POWER MODULE**

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**EXPERIMENT #1**

**Educational Goals**:

* Discover where Water comes from through the Hydrological Cycle
* Explore the Free Power of Water in Rivers, Lakes, and the Ocean.
* Understand the Historical Use of Water Power to deliver Mechanical Energy through Water Wheels
* Investigate how Dams and Turbines Work to Develop Electrical Power.
* Understand Water Conservation, Pollution, and Treatment

Ov**erview**: This experiment deals with building a model of a water-powered saw mill. It shows how water current can develop mechanical energy through a water wheel. Students will view an introductory power point on water, the hydrologic cycle, water wheels, dams, head pressure, and water turbines used to develop hydroelectricity. The issues of Conservation, Pollution, and Sewage Treatment are also discussed, with emphasis on personal responsibility.

**Experiment #1Content:** Students will build the saw mill shown in the Student Manual included. You will need the clear bin, the saw mill, and a two-liter bottle of water. Set the saw mill in the bin, and explain the conversion of mechanical energy in the water to kinetic energy in the water mill. In other words, the movement of the water onto the wheel makes it go around when then drives the saw mill back and forth through gears. This relates to machines in the 19th century which were driven by water power.

**Experiment #1 Time**: Approximately .5 hour to do the power point and discuss water power and approximately 1 hour to build the sawmill.

**Materials Needed**:

* Hydro Power Kit
* Clear Plastic Bin
* Clear Water Bottle

**Directions**: Go through power point and have kids read most of the slides. Discuss thoughts and questions about the history of water, water wheels, the environmental and economic benefits of water power, and the conversion of the mechanical energy in the water to power, as well as electrical energy through water turbines at dams. The point of this experiment is to show the kids how water develops power through the conversion of mechanical energy, and how that helped develop our country.

**Topics to Discuss**:

* Where Water Comes From
* History of Water Power
* Water Wheels
* Dams and Water Turbines
* Conservation
* Pollution
* Water Treatment
* Personal Water Use

M**entor Notes**: This is a really simple experiment. Mostly the kids have fun building the saw mill, and playing with water! However, the elements of the power point are good to emphasize relative to how they use water themselves and educationally as to how electricity is generated in dams.

Points to pay attention to: kids being careful to build properly, not splashing water everywhere, keeping the area clean, and drying all the parts, including the bin, thoroughly with paper towel before putting away.