

# Wind Turbine Design

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**Activity Time:** 90 min.

## Summary:

The objective of this activity is to design a turbine with blades that can spin when placed in front of a fan. This activity can be extended to see how much power their turbine produces by seeing how much weight their turbine can lift.

## Materials

- wooden dowels
- wooden skewers
- straws
- index cards
- popsicle sticks (small and large)
- corks
- clay
- pipecleaners
- string
- fan (this is the wind)
- ziploc bag

## Activity Outline

### **1. Ask (10min):**

- Begin the activity with an introduction to energy to get the kids thinking about how they use energy and where energy comes from.
- Try to motivate the need for wind energy (fossil fuels... climate change... greenhouses gases and such).
- Show a video clip of Bill Nye the science guy to show them where wind comes from and the movement of wind can be captured using wind turbines.
- Final picture they see should be different types of wind turbines that could be made. (see Slides)

### **2. Imagine (15min):**

- Divide up into groups of 2.
- Give them a “kit” (ziploc bag with all the materials listed above)
- Ask them to draw what they think their turbine will look like and what materials they would use in the kit.
- Go around and ask them exactly what they are drawing and have them explain to you why they are doing what they are doing and why they believe it will work.
- If time permitting, have them stand in front of the class and present their work.

Note: the overall objective of this activity is to design a turbine with blades that can spin when placed in front of a fan.

### **3. Create (45min):**

- Each team designs a turbine
- Each team is allowed to test their turbine in front of the fan as many times as they want

### **4. Discussion (5min):**

- Get them back together and ask what is going well and what is not going well.
- This gives them a chance to record what they are doing and share ideas with each other.
- At this point, you can give them some tips for how to improve their design.

### **5. Improve (15min):**

- Give them an opportunity to implement some of the changes you talked about during discussion and test out their new designs.

## Comments/Questions:

Option to take it a bit further: For those that complete the turbine build, you attach a bucket to the back of their turbine and see if their turbine can lift the bucket. This would simulate the amount of power their turbine is capable of producing. In addition, pennies can be added to the bucket to increase the weight. The kids can calculate the power their turbine produces.

## Examples

