

# Wind Turbines

By: Nevaeh Seales  
Central High School  
Providence Rhode Island



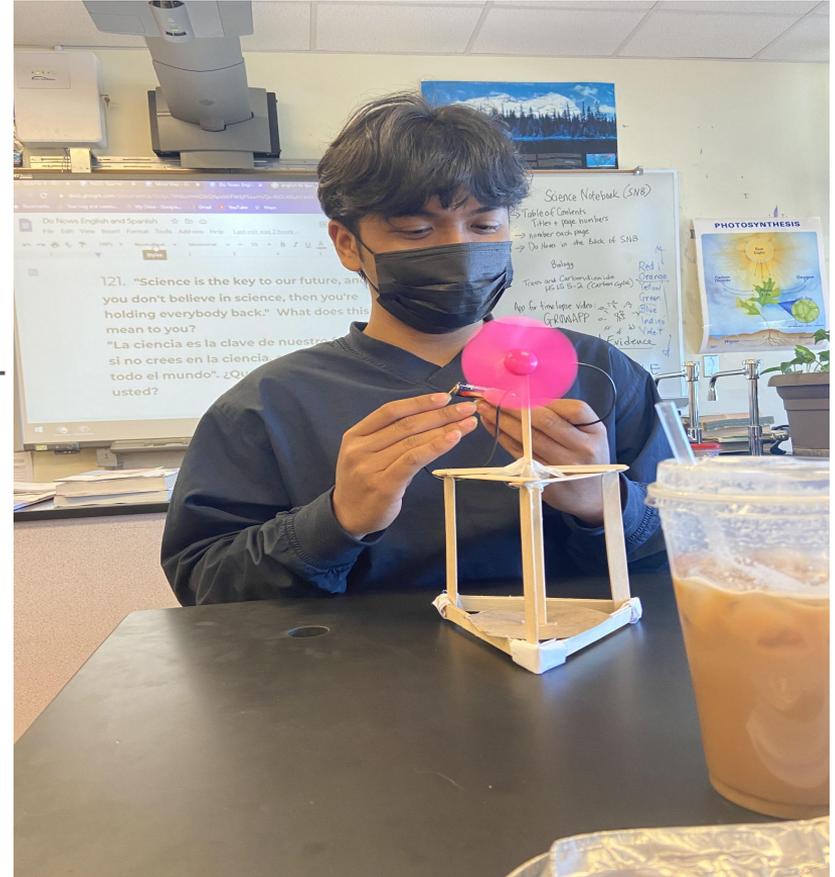
## An Idea:

The U.S. uses a large amount of non-renewable resources to get through everyday life, which is dangerous and bad for the environments. They also play a big part in global warming. Wind turbines however use one of the biggest renewable energy sources, wind. We could use this sage, effective way to generate electricity and hopefully reduce problems, such as air pollution, to some extent. A good start is making something useful and effective for students like me. A place where we could go out and learn on a nice day while having the option to charge our phones and or computers. Essentially an outdoor classroom. Now that we have an idea, we have to figure out how we can build and wire a functioning wind turbine to power an outdoor classroom with 12 powering stations.

# Electricity

In order to have charging stations, electricity needs to be generated. Electricity is a secondary energy resource and can be produced from wind energy.

Rhode Island's average wind speed is 15.34 mph. That wind speed could generate approximately 194 volts of electricity. We need 12 charging stations and each station will need to receive 5 V. Total voltage needed is 60 V to power the 12 stations.



# Airfoil and Pitch

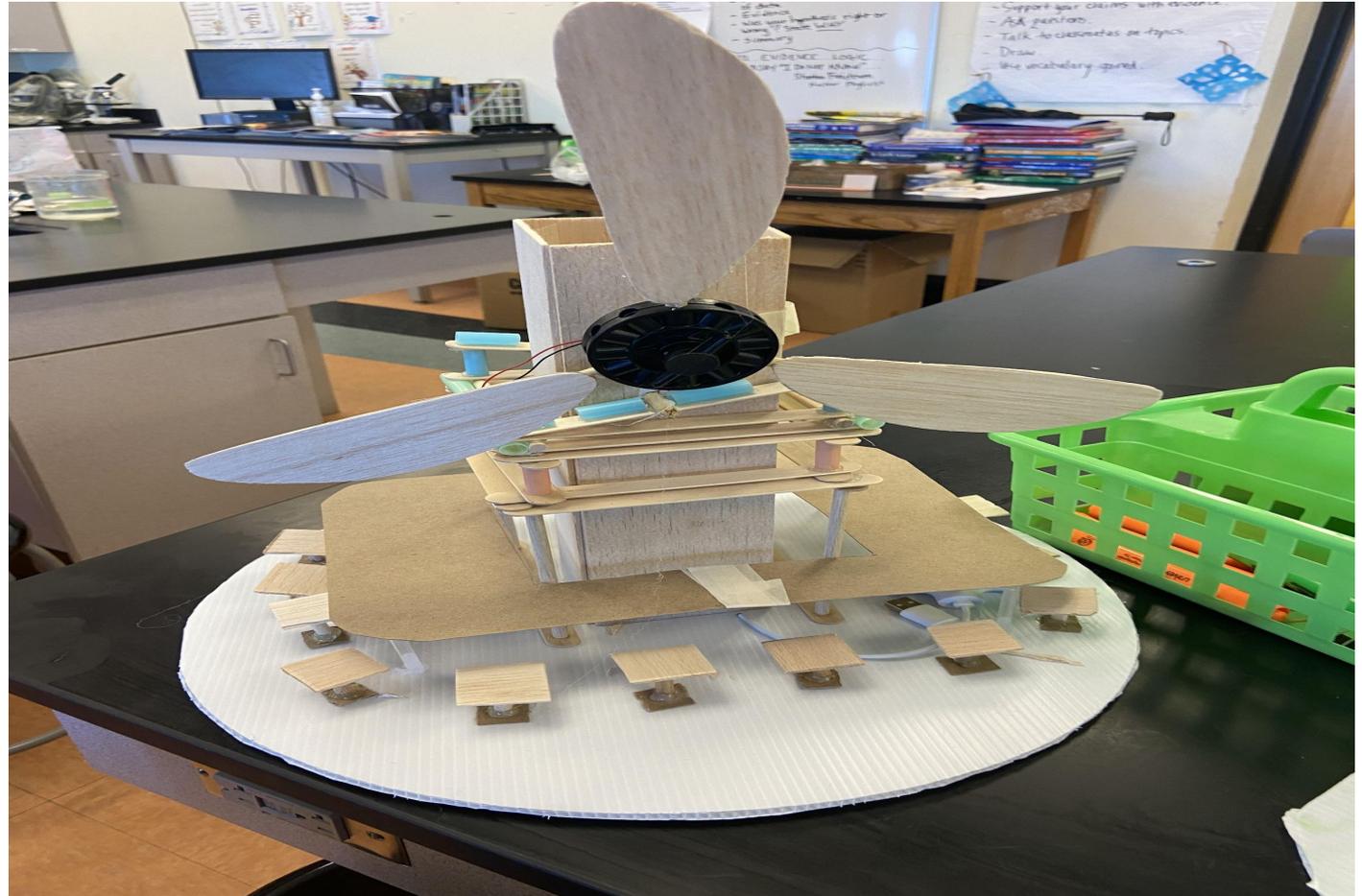
The airfoil shape helps generate lift, an aerodynamic force that helps turbine blades rotate. The pitch is also something to be taken into consideration, as it also affects the amount of lift generated. The pitch is the angle the blades are set at. If they are set at a certain angle then the wind will be deflected at an Opposite angle, which can be proven by Newton's Third Law that states, "for every action, there is an equal and opposite reaction".





# Testing!

Trial and Error!



# Redesigning!

Geers!

Switch!

