

## Making Waves

In this activity, you will investigate how the speed of the wind and the length of time the wind blows affect the height of a wave.

You will need to get...

11" x 14" white paper  
3 speed electrical fan  
gooseneck lamp  
clock or watch  
rectangular clear plastic storage box  
water  
metric ruler

Procedure:

1. Position the box on white paper beside the lamp.
2. Fill the plastic box with water to within 3 cm of the top. Direct light from the lamp onto the box.
3. Place the fan at one end of the box to create waves. Start the fan on its slowest speed. Keep the fan on during measuring.
4. After 3 minutes, measure the height of the waves caused by the fan. Record your observations. Through the plastic box, observe the shadows of the waves on the white paper.
5. After 5 minutes, measure the wave height and record your observations.
6. Repeat steps 3 to 5 with the fan on medium, then on high.
7. Turn off and unplug the fan. Observe what happens.

Data & Observations:

Make qualitative and quantitative observations about what happened during your experiment and complete the table below with the acquired data.

Wave Data			
Fan Speed	Time (min)	Wave Height (mm)	Observations
Low	3		
Low	5		
Medium			
Medium			
High			
High			

Analysis:

1. Use a spreadsheet to plot the data obtained to show the relationships between length of time of wind, wind speed and wave height. Copy and paste the graph into your report.

2. Determine whether the wave height is affected by the length of time that the wind blows.
3. Determine whether the height of the waves is affected by the speed of the wind.
4. What was your hypothesis? Was it supported or refuted?
5. What was your independent or manipulated variable?
6. What was your dependent or responding variable?
7. Was this experiment a controlled experiment?
8. If you had to perform this experiment again, what might you do differently?
9. Suppose you wanted to study how fetch affects wave height. Design an experiment that would observe the relationship between fetch and wave height.
10. How might this lab provide useful information for the study of oceanography?