



# Science Experiment: Pendulum Painting Project: Arts & Crafts

## Supplies:

- Bamboo poles (or similar)
- Twine
- Rubber feet
- Craft knife
- Plastic bottle
- Elmer's glue nozzle
- Hot-glue gun
- Electrical or duct tape
- Hole punch (1/4 inch)
- Large paper clip
- Tempera paint
- Water
- Measuring cup
- Sieve
- Large piece of paper (watercolor, newsprint, craft paper, etc.)

**Time:** Set-up: 30 minutes; Painting: 15 minutes

## What to Do:

1. Create a tripod by lashing together three bamboo poles (or dowels, pipes or similar) with twine. Attach rubber feet to ends of poles for added traction. (Ready-made tripod easels can also be purchased from an office supply store.)
2. Use a craft knife to cut off the bottom 1/2 inch of a recycled plastic bottle. With hot glue, attach glue nozzle to mouth of bottle, adding extra glue around bottom rim of nozzle to create a tight seal. For added security, wrap seam in electrical or duct tape.
3. To reinforce bottle where support strings will be tied, fold three small tabs of tape in an equidistant configuration on the cut end. Punch a hole through each tab of tape (and the plastic bottle) with 1/4-inch hole punch, thread a long piece of twine through each hole, and secure in place.
4. Bring all strings together and tie in a large loop about 1 to 2 feet from the bottle. Thread loop onto a large paper clip. Tie a piece of twine to the top of the tripod so that it hangs down into the center. Tie a loop at the bottom end of the twine and attach pendulum with paper clip "hook." Adjust height; the nozzle should be at least 1 inch away from the paper.
5. Mix one part tempera paint with one part water. Paint should run freely but should not be too watery. Add more paint or water if necessary. Strain paint and water mixture through sieve to remove any lumps and prevent the pendulum nozzle from clogging.
6. Place paper under tripod. Make sure nozzle is closed and carefully add paint to pendulum. Pull pendulum off to side of paper, open nozzle and allow paint to run freely. With paint flowing, let pendulum swing over paper, changing direction as desired.
7. To stop flow of paint, place finger under paint nozzle and twist to close. Allow artwork to dry flat.

## **The Science Behind Pendulum Painting**

A pendulum is a fixed object hung from a point so it can swing freely back and forth due to the force of gravity. When discussing the concept with children a great example to use is a swing. As a the swing moves back and forth it is demonstrating the physics of a pendulum. The swing is moving back and forth due to the force of gravity on the swing.

### **Reflect:**

1. Why did you choose your design?
2. Did your design turn out as your planned? Why or why not?
3. How was science involved in this experiment?
4. What did you learn in this experiment?

### **Apply:**

1. Where have you seen a pendulum similar to what was used in the experiment?
2. In what other ways have you seen science and art connected?
3. How can you use what you learned in other areas of your life?

Source: <http://www.marthastewart.com/894554/pendulum-painting> (includes instructional video)