

Fortune Teller Fish

Scientific Method Learning Activities



Introduction

Place the fish in your palm and watch as it curls up or even flips over. Have your students hypothesize how it might work. Is there a scientific basis to it—or can it really tell your fortune?

Concepts

- Polymers
- Scientific method
- Inquiry-based learning

Materials

Fortune Teller Fish

Safety Precautions

The materials used in this activity are considered nonhazardous. Follow all standard classroom and laboratory safety precautions.

Procedure

1. Place the Fortune Teller Fish in the palm of your hand.
2. Instruct students to make observations as it sits in your palm.
3. Ask for a student volunteer and place the fish in the palm of their hand. Does it respond the same way or differently?
4. Repeat step 3 using different student volunteers.
5. After the demonstration, divide students into groups of 2–3 students each.
6. Allow students to experiment with the fish and brainstorm ideas of how the fish works.
7. Student groups should hypothesize why the fish responds as it does. Inform students to design an experiment to test their hypothesis.

Disposal

The Fortune Teller Fish may be saved and stored for future use. If the fish is placed in water, it will no longer be functional and it should be disposed of in the regular trash.

Tips

- This activity may be used as a take-home lab over a long weekend or holiday break. Students should return to class with a hypothesis about how the fish works. Instruct them to use the scientific method when developing their hypothesis.
- Have fun with the Fortune Teller Fish by telling students that the following movements correspond to the test subject's "feelings."

Fish Response	Indicates
Moving head	Jealousy
Moving tail	Indifference
Moving head and tail	In love
Curling sides	Fickle (or deceitful)
Turns over	False (or untrue)

- Remind students that their experiment plans should stand a chance of forming a "realistic" conclusion. *Example:* The fish responds to heat. It was held over a candle flame, caught on fire, and no longer functioned.

Discussion

The Fortune Teller Fish is made of a unique hygroscopic polymer, which is a material that readily takes up and retains water. When the fish absorbs moisture from your palm or other object that contains water, it responds by moving, curling, or even flipping over. This response is due to the expansion, or swelling with moisture, of the lower side of the fish. This can be shown (or proven) by placing the fish on paper or other place where there is not any water—it will not move or respond at all, even when warmed.

Heat or heat transfer is not the source of the movement since the polymer is water-absorbing and not heat-absorbing. This can be demonstrated by placing the fish on a hot, dry surface and on a cold, dry surface. The fish fails to respond in either case, showing that heat does not affect the movement of the fish.

Connecting to the National Standards

This laboratory activity relates to the following National Science Education Standards (1996):

Unifying Concepts and Processes: Grades K–12

Evidence, models, and explanation

Constancy, change, and measurement

Content Standards: Grades 5–8

Content Standard A: Science as Inquiry

Content Standard B: Physical Science, properties and changes of properties in matter

Content Standards: Grades 9–12

Content Standard A: Science as Inquiry

Content Standard B: Physical Science, structure and properties of matter, chemical reactions

Acknowledgment

Special thanks to Lee Marek (retired), Naperville North High School, Naperville, IL for providing us with the instructions and teaching tips for this activity.

Flinn Scientific—Teaching Chemistry™ eLearning Video Series

A video of the *Fortune Teller Fish* activity, presented by Lee Marek, is available in *Scientific Method Learning Activities*, part of the Flinn Scientific—Teaching Chemistry eLearning Video Series.

Fortune Teller Fish are available from Flinn Scientific, Inc.

Catalog No.	Description
AP5449	Fortune Teller Fish, Pkg/12 or Pkg/144

Consult your *Flinn Scientific Catalog/Reference Manual* for current prices.