

# Educational Innovations<sup>®</sup>

#SS-40B

## Fortune Fish, 1 gross (144)

By Ron Perkins

The Fortune Fish is a very thin piece of red cellophane in the shape of a fish, 8.9 cm (3.5 inch). When placed in the palm of a hand it twists and curls. It seems to move magically, different for different people.

### Classroom Ideas

1. Place a Fortune Fish in the hand of each student and observe. Ask students to brainstorm possible causes for the movements.
2. Moisten a small piece of paper towel, ca. 12 cm<sup>2</sup> (2 in<sup>2</sup>), with two drops of water. Holding the Fortune Fish by the tail and horizontal, slowly lower the head over the moistened piece of towel, without ever touching the towel. What do you observe? What happens when you lower the Fortune Fish, held vertically?
3. Use a small piece of tape to fasten the tail of the fish to a table. Bring the moist paper towel close to its head. A Fortune Fish, which continuously moves up and down, can be called a Fortune Fish motor. Can you make one? What is the energy source for this motor? Can you find ways to increase the frequency of the up and down movement? How many repeating cycles can you observe without touching either the cellophane or the paper towel? Does the motor work better when the air is warmer or cooler? When covered with a large glass or not covered?
4. Out of sight of students, place two drops of water on a scrap of rug, ca 20 cm<sup>2</sup>. Then, ask students to find the location of the water by using the Fortune Fish as a moisture detector.
5. Discover other uses for the Fortune Fish.

### Explanation

A common incorrect hypothesis is that heat causes the movement of the Fortune Fish. To show that this is not the correct, hold the tail of the Fortune Fish with tweezers over something warm. No movement is expected.

When the Fortune Fish is placed in a hand, moisture is absorbed on one side of the cellophane, causing that side to expand. If only one side expands, the thin cellophane curls. When the water on the cellophane evaporates, the fish becomes flat.

The Fortune Fish motor absorbs water when close to the moist paper towel and curls upward. Away from the higher concentration of water vapor, the water molecules are released from the cellophane and the fish becomes flat. For the Fortune Fish motor to work, there must be a difference in concentration of water vapor, so that water can be both absorbed and released. Slight circulation of air sometimes helps.



362 Main Avenue  
Norwalk, CT 06851  
[www.teachersource.com](http://www.teachersource.com)

Phone (888) 912-7474  
Fax (203) 229-0740

[info@teachersource.com](mailto:info@teachersource.com)

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