TEACHING WITH EGGS

Fun with Eggs in the Classroom

These activities were adapted from the book Teaching with Eggs by Alfred Devito, Professor Emeritus of Science Education at Purdue University. This is just a small sample of the many ways that you can use eggs to demonstrate core scientific principles in the classroom. For more ways to use eggs in the classroom visit www.inpoultry.com.

How Strong is An Egg?

An egg's unique shape gives it great strength. On its convex surface, an egg can support comparatively great weight before breaking. A chicken egg can support about 9 pounds before breaking; a turkey egg can support 26 pounds; and an ostrich egg can support about 100-130 pounds. And yet, an egg is usually thought of as a fragile thing. Eggs are carefully packaged to prevent their breakage. In a specific direction, eggs are quite strong.

ACTIVITY ONE: As a precaution, place an uncooked egg in a plastic bag. Then, place the egg between your folded hands with one end of the egg in each palm. Squeeze your hands together.

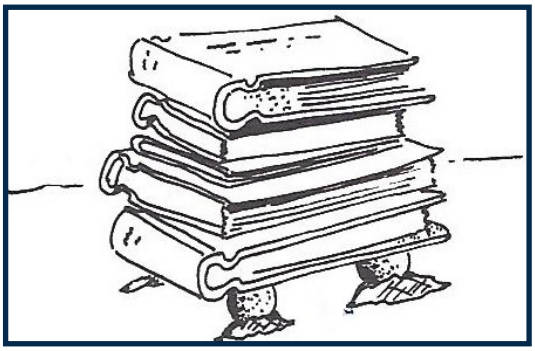
Were you able to crack the shell?

If the egg had a previous crack, you probably squashed the egg.

If the shell was undamaged you should not have been able to exert enough pressure to break the shell.

DISCUSSION POINT: The curvature of the egg distributes the pressure evenly rather than concentrating it at any one point, and the pressure on the egg is stable throughout the egg shell.

ACTIVITY TWO: Gather four uncooked eggs, modeling clay, a large flat book, a plastic bag that the book fits in, additional smaller books and a scale. Place the four uncooked eggs on a flat surface, tapered end up. Use the clay to form a base for the upright eggs. Place the eggs so that the four eggs are able to be covered by the large flat book. Weigh the large flat book, record the weight. Wrap it in a plastic bag. Place the book on top of the four eggs. Continue to add books, weigh each book and record the weight before you add it to the stack.



DISCUSSION POINTS: What is the total weight supported by the four eggs? Would your results be different if you placed the four eggs tapered end down? On their side?

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Porosity of an Egg

The shell of an egg contains deposited layers of calcium carbonate that provide the greatest possible strength for the egg. The shell is also arranged to leave thousands of small openings or pores for water within the egg to evaporate and for external air to move through the holes into the egg to permit a chick embryo to breathe.

ACTIVITY: Using a fresh egg, blow the contents clear of the egg. Using sealing wax or some other sealing material, seal the bottom hole in the egg. Using an eye dropper add 5-6 drops of perfume or any other aromatic liquid into the egg. Seal the top hole in the egg with more sealing wax. Wash the egg thoroughly to remove any spilled perfume or aromatic liquid. Weigh the egg and its contents, record the weight. Place the egg aside for a day. Weigh the egg and its contents, record the weight.

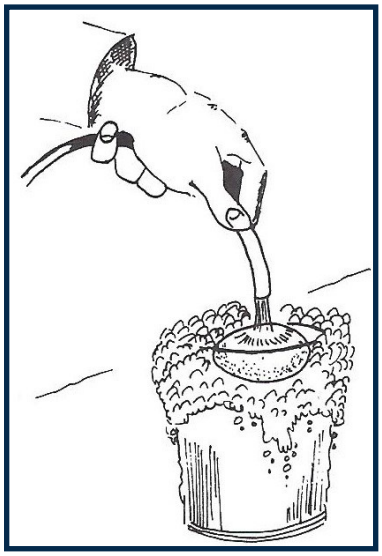
Place it aside for a week. Weigh the egg and record the weight again. Repeat this process for several more weeks.

DISCUSSION POINTS: During the time between weighing the egg, can you detect any perfume odor from the egg?

Look at chart recording the weight, how do the various weights compare? Why is the weight changing from week to week?

After four weeks of recording the weight, open the top seal. What do you see inside the egg?

The Dancing Egg



ACTIVITY: Choose an egg that is heavy enough to sink to the bottom of a drinking glass. With the submerged egg positioned at the bottom of the glass, direct a stream of water downward over the egg. The egg will rise to the surface of the water.

DISCUSSION POINTS: Why is the egg rising to the surface of the water? It has to do with the Bernoulli principle – a fast moving fluid exerts less pressure than a slow moving fluid. The water flows faster on the top portion of the egg than on the bottom.

You can make the egg go up and down at different rates in the glass by varying the amount and force of the water stream.

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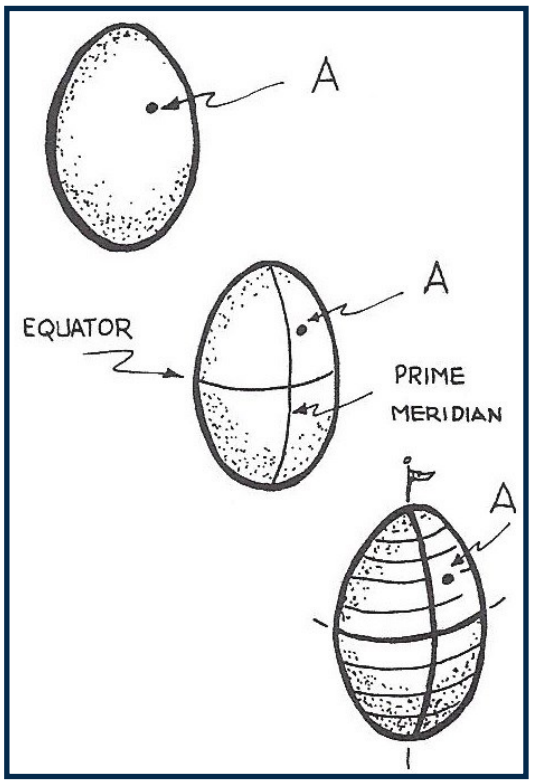
Mapping On Eggs

Eggs are a great tool to use when explaining how the Global Positioning System (GPS) allows us to accurately travel anywhere on Earth.

ACTIVITY: Start with two Hard boiled white eggs. Have one student, using a magic marker, place a dot anywhere on the egg. Give another student the other egg. The first student describe the position of the dot to the other student so that he or she can place a dot in a similar position on their egg.



This can be extremely difficult unless you have some reference lines. Use the marker, and holding the dotted egg vertically with the blunt end down, construct an equator line. This should divide the egg into a north and south hemi-egg (hemisphere). Construct a vertical line at right angles to the equator, this should divide the egg into two vertical halves. This line can serve as your division of the egg into an east and west hemi-egg. This line is similar to a line of longitude and can be called your prime-egg meridian. Your egg shell is now divided into 4 segments.

Continue constructing lines of longitude and parallels of latitude separated by a predetermined constant degree separation. Mark the lines in degrees. Now have the student with the dotted egg describe the dot position to the other student.

DISCUSSION POINT: How did the reference lines assist the student in more accurately describing the position of the original dot to their classmate?

For further exploration use an egg with several numbered dots, have the students use the reference lines to accurately describe how to travel to each dot in numerical sequence.

Indiana State Poultry Association, Purdue Animal Sciences, 915 West State Street, West Lafayette, IN 47907

ISPA@purdue.edu 765-494-8517 www.INpoultry.com