Educational Innovations, Inc.®

GB-2

Gro-Beast Alligator

Teacher Instructions

When a green object in the shape of an alligator is placed in water, over the next few weeks, it increases in length, mass and volume. When removed from water, the expanded alligator returns to its original shape.

Explanation

The Gro-Beast Alligator is made from a polymer that readily absorbs water. Materials of this type are said to be *hydrophilic*, water loving. Materials with the opposite property are said to be *hydrophobic*, water fearing. An example of a hydrophobic substance is Magic Sand, (#SS-2), which repels water and never seems to "wet."

Activity #1: The Growing Alligator

Introduce the activity by reading the story *Zack's Alligator* by Shirley Mozelle, (#BK-200). In this beautifully illustrated book, all the fun begins for Zack (and your students!) when a small package arrives in the mail. Contained within, a small alligator key chain and a note from Zack's uncle. Following his uncle's instructions, Zack places his key chain in the sink and WOW! – a huge, fun-loving alligator emerges and continues to grow in size!

Remove a Gro-Beast Alligator from its package and have your students observe its original size. Ask them to estimate its original mass and length. Follow by taking measurements of the alligator. You will need a balance for determining its mass. An easy method for determining the length of its curved body is to use a string. Hold or tape one end of the string to the tip of its snoot and begin laying the string along the body. When the tip of the tail is reached, cut the string. Then, measure the length of the string. Ask students to predict how large it will become when placed in water. Worksheets, used by Karen Perkins, a third grade teacher in Greenwich, CT, are included in this package.

Place the alligator in a dishpan of water and continue making measurements of mass and length every day (preferably at about the same time of day) until the alligator reaches its maximum size. In some parts of the country, bottled water may increase the size of the alligator. It is necessary to keep the Gro-Beast Alligator out of direct sunlight as UV radiation degrades the polymer. To determine the mass, you will need a balance (EI has a full line of Ohaus Balances). If you use the string method for determining its length, you may want to fasten the strings to a piece of paper and make a *string* bar graph.

Actual Record of Alligator Growth

Day #	Date	Length	Mass
1	Sept. 11	12 ½ cm	9 g
2	Sept. 12	24 cm	67 g
3	Sept. 13	29 cm	92 g
4	Sept. 14	32 cm	150 g
5	Sept. 15	33 cm	195 g
6	No School		
7	No School		
8	Sept. 18	35 cm	227 g
9	Sept. 19	36 ½ cm	230 g
10	Sept. 20	36 ½ cm	239 g
11	Sept. 21	37 cm	239 g
12	Sept. 22	37 cm	239 g

I use this as a class lesson to teach prediction, measurement and record keeping. Different children are assigned to measure the length and determine the mass of the alligator each day. Over the four-week period needed for both the Growing and Shrinking, this allows me to access each child's measuring skills. As a Literature Connection, we read *Zack's Alligator by Shirley Mozelle* and *Lyle, Lyle Crocodile* by Bernard Waber. The children research the difference between alligators and crocodiles. As a Writing Connection, the children name our alligator and write stories about his adventures. As a Math Connection, the children determine how much additional water the Gro-Beast has absorbed each day. This gives them practice in subtraction. As we gather data, the children construct bar graphs and line graphs.

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Activity #2: The Shrinking Alligator
Place the expanded alligator on paper towels or newspapers out of direct sunlight. Continue making measurements as the water slowly evaporates. Notice that the shrinkage of the alligator is a much slower process than its growth.

Actual Record of Alligator Shrinkage

Day #	Date	Length	Mass
1	Sept. 24	37 cm	273 g
2	No School		
3	No School		
4	Sept. 27	34 cm	168 g
5	Sept. 28	30 ½ cm	136 g
6	Sept. 29	26 cm	107 g
7	Sept. 30	25 cm	82 g
8	Oct. 1	23 cm	67 g
9	No School		
10	No School		
11	Oct. 4	19 cm	32 g
12	Oct. 5	17 ½ cm	25 g
13	No School		
14	Oct. 7	15 cm	14 g
15	Oct. 8	14 cm	11 g
16	No School		
17	No School		
18	No School		
19	Oct. 12	14 cm	9 g
20	Oct. 13	14 cm	8 g

Activity #3: Alligator in a Bottle
An interesting activity for your science table is to expand a Gro-Beast Alligator inside a two-liter, clear, colorless, soda bottle. Simply place the Gro-Beast in water for about 15 minutes until the legs are softened enough to insert the alligator inside the empty bottle. Fill the bottle with water and screw on the cap. Bottled water sometimes works better. In about a week the alligator will have filled the bottle as can be seen in the picture shown in your EI Catalog. Actually, the alligator continues to absorb water over the next few months as can be seen by a gradual change in the curl of its tail.

Activity #4: Further Experimentation – Science Projects
Investigate the effect of the growth of Gro-Beast Alligators by using:

- Different water sources: pond water, salt water, bottled water, distilled water, etc.
- Different concentrations of a dissolved substance, such as sugar, baking soda, or salt.
- Different solutions with varying pH, such as different concentrations of vinegar, baking soda, etc
- Different temperatures.
- Different exposures to direct sunlight.
- Different carbonated beverages, sugar vs. sugar free.

NOTE: Data shown here was actually recorded by students using an EI Gro-Beast. Because of varying conditions, you may or may not observe similar results. As Prof. Henry Bent once said: *Every experiment works! But, sometimes not the way you expect.*

Name_____

Record of Alligator Growth

Day #	Date	Length	Mass

Name_____

Record of Alligator Shrinkage

Day #	Date	Length	Mass

Name_____ Date _____

Our Alligator

Today, we met our class alligator. I estimate that it is _____ cm from the tip of its nose to the tip of its tail. I estimate that it weighs _____ grams.

When we measured our alligator,
it was _____ cm long.
When we weighed our alligator,
it was _____ grams.

We predict that our alligator is going to grow when we place it in a tub of water.

I estimate that when it is fully grown it will be _____ cm long and will weigh _____ grams.

I predict that it will take _____ days to reach its full growth. The date will be _____.

Our alligator reached its full growth on _____. It took _____ days.

