

TIME FRAME:

One 30-minute lesson plus an additional 2 minutes twice a day for observations.

OBJECTIVE:

Students will understand the destructive nature of plaque acid in their mouths.

MATERIALS:

- 2 clear jars with lids (large enough for an egg)
- 2 labels
- marker
- 2 raw eggs
- water
- white vinegar
- pencils

PREPARATION:

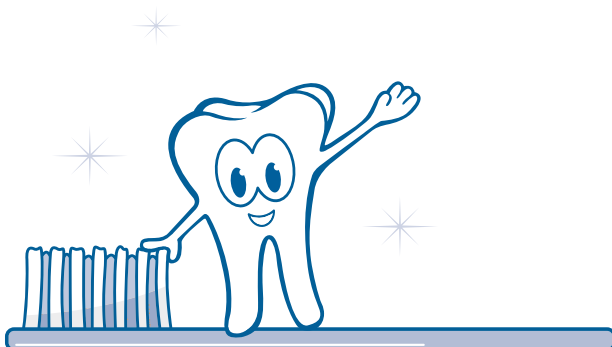
Gather materials

INSTRUCTIONS:

1. Ask students what they know about tooth decay.
2. Explain that you will be conducting a scientific experiment today on what happens when teeth are not properly cleaned and the acids produced by plaque attack the teeth.
3. Explain that vinegar is a mild acid. If we do not brush our teeth, plaque forms and gives off acids very similar to vinegar. Also explain that one of the materials that make up eggshells, calcium, is also an important substance in teeth. For the experiment, you will be using eggshells to represent teeth and vinegar to represent the acids in plaque. The second jar with eggs in water is the control, or something you will use to compare the findings in the jar with vinegar.
4. Place one egg into each of the two glasses and ask the students to hypothesize, or make their best guess, at what will happen when you put water in one jar and vinegar in the other. Have them record their ideas in their journals.
5. Now fill enough water into one jar to cover the egg and do the same with vinegar in the other jar. Label and date the two jars.
6. Let the students observe the contents of the two jars and note anything they see.
7. (Small bubbles will form on the egg in the vinegar - this is a chemical reaction.) Explain that this is similar to what happens when you eat. Acids in your mouth, much like acids in the vinegar, react with the food and start to break it down. Some acid is helpful for us to digest food but unless we brush and floss regularly we could have too much of it which is harmful to our teeth.
8. Ask students to come up with a hypothesis of what will happen if you leave the vinegar and egg in the jar for several days and write it in their journals.
9. Observe changes that take place twice a day and have students record these changes.

RESULTS:

In two or three days, the acids in the vinegar will dissolve the eggshell around the egg. The egg in the jar with water will remain unchanged. Explain that acids in the vinegar are similar to the acids that attack the enamel in our teeth. If teeth are not brushed and flossed, the enamel can begin to dissolve and allow cavities to form.



DAY 2/3 PART 1: *Brushing*

TIME FRAME:

Day 2: one 10-minute lesson
Day 3: one 30 minute lesson

OBJECTIVE:

Students will learn the importance of brushing properly.

MATERIALS:

- 1 hard-boiled egg for each group of two children
- 1 toothbrush for each group of two
- 1 cup for each group of two
- assorted flavors of dark soda
- homemade toothpaste
(amount required per student)
 - 2 tsp calcium carbonate
 - 1pkg sugar substitute
 - 1/4 tsp baking soda
 - 3 drops essence of peppermint
- teaspoon (1 per child)
- small container (1 per child)
- plastic spoon (1 per child)
- handouts
- pencils□

PREPARATION:

Grind up enough calcium carbonate (*chalk*) for each child to have 2 tsps of powder. This is approximately 1 piece of chalk per student.

EXTENSIONS:

Language Arts: Have students write a brochure to share with another class or their families about the importance of brushing.

INSTRUCTIONS:

On Day 2:

1. Talk about what things are good for your teeth and what things are bad.
2. Explain to the students that the egg represents their teeth right now (*nice and white*). Tell them the soda resembles the bad things for their teeth.
3. Arrange students into partners. Have each group of two drop their “tooth” into the dark soda. For variety, use different colors and flavors of soda for each group. Ask them what they think will happen to the egg overnight. Have them record their hypothesis in their journals.

On Day 3:

1. Tell the students that you are going to make homemade toothpaste.
2. Arrange students into same partners as the day before. Give each group of two enough ingredients for both members to make their own toothpaste.
3. Mix together 2 teaspoons of calcium carbonate (chalk), one package of sugar substitute, 1/4 teaspoon of baking soda. (Option: add 3 drops essence of peppermint.) Slowly add water to make a paste; this is approximately 1 teaspoon.
4. Have students look at hypotheses they made on previous day.
5. Look at the eggs. Have students record what they observe in their journals.
 - a. What happened?
 - b. Why do you think that happened?
6. Have students read the ‘*How to Brush*’ page in their journals.
7. Have each group of partners take a tooth brush and put their toothpaste on it. Tell them to gently brush their tooth (*the egg*).
8. Have them record their observations in their journals.
 - a. What happens when you use good brushing skills?

