


## Adventure Description:

In this adventure, students will think like a food scientist and test which chemicals best preserve an apple.



## Activity

Teacher Note: This activity has a lag time of at least 3 hours. Each student (or pair of students) will need a styrofoam bowl labeled “regular water”, a styrofoam bowl labeled “soda”, and a styrofoam bowl labeled “lemon juice”. Students can write the names on the bowls during the activity or you can write the names on the bowls before class. Students will also need 2-3 slices of apples for each bowl.

### Step One: Background Information (5 minutes)

- Explain to students that food scientists are scientists who learn about and create different types of food.
- Next, explain that some food scientists are in charge of creating new ways to make apples last longer!
- Ask students if they have ever cut an apple to enjoy, but it turned brown before they had a chance to eat it all?
  - Explain to students that this happens because the apples are “oxidizing” because they are exposed to the air.
- Explain that food scientists do experiments to learn more about different types of food. An experiment is a test used to learn more about something.
- Tell students that they will think like food scientists and conduct an experiment on apples! Show **Handout: Experiment Overview**. Walk through the handout together as a class.

### Step 2: Making a Prediction (5+ minutes)

- Explain to students that they will first make a prediction about what will happen when they put apples in different liquids for a few hours. Explain that a prediction is a guess about what will happen in the future.
- Provide students with **Handout: My Apple Prediction**. Explain to students that they will be putting their apples in regular water, soda, and lemon juice. Have students draw or write their prediction about what will happen when an apple sits in each liquid for a few hours.

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- If students need help making a prediction, provide the following prompts:
  - Do you think the apple will change size when it sits in the liquid?
  - Do you think the apple will turn brown in the liquid?
  - Which liquid do you think is best at keeping apples from turning brown?

### **Step Three: Putting Apples in Different Liquids (15+ minutes)**

- Explain to students that they will now set up their experiment to see what happens when they put apples in different liquids. First, students will put the apples in regular water. Provide students with the following materials:
  - 1/2 cup of regular water in a styrofoam bowl labeled “regular water”
  - 2 pieces of sliced apple
- Have students place their apples in the regular water.
- Explain to students that they will now put apples in soda. Provide students with the following materials:
  - 1/2 cup of soda in a styrofoam bowl labeled “soda”
  - 2 pieces of sliced apple
- Have students place their apples in the soda.
- Explain to students that they will now put apples in lemon juice. Provide students with the following materials:
  - 1/2 cup of lemon juice in a styrofoam bowl labeled “lemon juice”
  - 2 pieces of sliced apple
- Have students place their apples in the lemon juice.
- Teacher note: Make sure that you save apples to place in a bowl with no liquid. This will provide students something to compare their results to.
- Have students place the bowls in a safe spot in the classroom. Explain that the bowls will sit for there for three hours! After three hours, students will look at the apples and make observations of them. This means they will get to look at the apples and see if they look different from when they first put the apples in the bowl.

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## Step Four: Making Observations (10+ minutes)

- After 3 hours are up, tell students they will look at their bowls and see what their apples look like!
- Explain to students that they will make observations of their apples. Provide students with **Handout: My Apple Observations**. Have students write or draw their observations.
  - Remind students to compare the apples that have been soaked to the apple slices that were not soaked. Do the apples that were soaked have fewer brown spots on them than the apples that weren't soaked?
  - Discuss as a class which liquid was best at preventing the apples from turning brown.
- Teacher note: All of the apples that were soaked will have fewer brown spots on them than the apples that were not soaked. This is because they are submerged and there won't be as much oxygen getting to the apples. The apples soaked in lemon juice should have the fewest brown spots.

## Materials List

### Provided Online

- Handout: Experiment Overview
- Handout: My Apple Prediction
- Handout: My Apple Observations

### Not Provided (each student needs):

- 1/2 cup water
- 1/2 cup lemon juice
- 1/2 cup soda
- 4 small bowls
- Permanent marker for labeling
- Apple sliced into small pieces

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