



Taste Bud Challenge: Lesson Plan for Homeschool

Overview

Raddish is designed by a dedicated team of teachers and chefs who believe the kitchen classroom is the tastiest place to learn. We love watching learning come alive when kids mix math, stir science, and taste culture!

Paired with the materials found in your Taste Bud Challenge box, this lesson plan divides your box into 4 45-90 minute lessons you can use and adapt to support your homeschool study, pre-k – middle school. Depending on your timeframe and child's age and engagement, these can be taught together or separated for a longer lesson. Please refer to the curriculum provided in your box: recipe guides, activity cards, skill card, and introduction card. Happy cooking! Happy learning!

Lesson 1: Tart and Tangy Chicken Piccata & Shiny Penny Experiment

Activity Time: 60 minutes

Learning Outcomes

- Students will learn that acid is the source of sour.
- Students will learn how to balance sour flavors with salt or sugar.
- Students will create a hypothesis.
- Students will discover the role acids play in nature and in our bodies.
- Students will conduct an experiment using pennies and vinegar.
- Students will experiment and share their findings.
- Students will have the opportunity to create their own extension experiments.

Materials

- Recipe guide and ingredients and tools listed within.

Shiny Penny Experiment

- a few old and dull (not shiny) pennies



- a non metallic bowl
- paper towel
- cup of water
- plastic or wooden spoon
- ¼ cup white vinegar
- 1 teaspoon of salt

Optional Extension Experiment Items

- lemon, lime, orange, grapefruit juice
- metal nuts and bolts
- coins other than pennies

1. Introduction

- Ask students if they know what an acid is? Listen to answers. Can you find an acid in your house? (eg. vinegar, lemon and orange juice.)
 - A young child may define acid as a liquid that tastes sour on your tongue.
 - An older child may understand the scientific definition to be a special chemical composed of many hydrogen ions.
- Facts about acids that you can share:
 - Acids in Nature:** There are many strong acids in nature. Some of them are dangerous and used as poisons by insects and animals. Some are helpful. Many plants have acids in their leaves, seeds, or even their sap. Citrus fruits like lemons and oranges have citric acid in their juice. This is what makes lemons taste so sour.
 - Acids and Bases in our Bodies**
Our bodies use acids too. Our stomachs use hydrochloric acid to help digest foods. This strong acid also kills bacteria and helps to keep us from getting sick. Our muscles produce lactic acid when we exercise.
- Let the students know that they will be conducting an experiment using an acid.

2. Time to Experiment!

Tell students that they will be conducting an experiment and show them the materials. Ask them to make a hypothesis (an idea they can test) about what will happen to the penny when they put it into the acid mixture.

Experiment #1

- Pour the vinegar into the bowl and add the salt. Stir it up.
- Put about 5 pennies into the bowl and count to 10 slowly.
- Take out the pennies and rinse them out in some water. Admire their shininess!
- Was your hypothesis correct?



How does it work?

There is some pretty fancy chemistry going on in that little bowl! It turns out that vinegar is an acid, and the acid in the vinegar reacts with the salt to remove what chemists call copper oxide. Copper oxide is what makes pennies dull.

Experiment #2

Add more pennies to the bowl for 10 seconds, but this time, don't rinse them off. Place them on a paper towel to dry off. In time the pennies will turn greenish-blue as a chemical called malachite forms.

Experiment #3 (optional)

Place one or two nuts and bolts in the same vinegar and watch - they *may* become COPPER in color! The vinegar removed some of the copper from the pennies, and if there is enough copper in the vinegar, the copper will become attracted by the metal in the nuts and bolts causing them to take on a new copper color.

Experiments #4 and 5 ...(optional)

Will other acids (like lemon juice or orange juice) work as well?

Does this cleaning chemistry work on other coins?

Do other amounts of salt make a difference in the chemistry of the experiment?

3. Kitchen Prep

- a. Read the Tart and Tangy Chicken Piccata recipe guide together.
- b. Identify and gather experiment materials.
- c. Gather tools.
- d. Discuss kitchen safety. Specifically, stove top safety. Remember to keep pan handles turned in and elbows high. (Visit Raddishkids.com/pages/safety)

4. Prepare Tart and Tangy Chicken Piccata

- a. Ask children to read or describe each step.
- b. Together, follow the steps in the recipe.
- c. Take turns juicing, dipping and stirring.
- d. When the chicken is ready taste and share!



Lesson 2: Salted Brownie Crisps and Cooking is Sweeter than Grammar

Activity Time: 45 minutes

Learning Outcomes

- Students will learn/review what an adjective and a noun are.
- Students will practice using adjectives to compare nouns.
- Students will practice comparing the tastes of food using the grammar they have learned.
- Students will practice counting syllables in nouns.
- Students will learn what makes the difference between different kinds of chocolate.
- Students will make Salted Brownie Crisps and (hopefully!) share with friends and family.

Materials

- Recipe guide, ingredients, and tools listed within.
- Grammar worksheet included.
- 3 different kinds of fruit, cut up to taste. For example, apple, orange, grapes.
- Large paper to record student answers during lesson intro.
- Paper and pencils.

1. Introduction

- a. Ask students to eat a bite of each of the fruits. Ask them to describe how they taste. If they describe each one separately prompt them to compare one to the other. They might say one is sweet and one is dry. Try and get them to compare the same attribute. For example, you might say “You said the apple was sweet. What about the grape?” and see if they spontaneously use the comparative adjective of “sweeter”.
- b. Let the students know that while they have their snack they will be learning about nouns (*a word that refers to a person, place, or thing*) and adjectives (*a word that describes a noun*).
- c. Ask the students to say the nouns of the foods on the table. (Grape, banana etc) Ask them to use as many adjectives as they can to describe each noun. (Sweet, juicy, crunchy). Record these on large paper for students to be able to refer back.

2. Teaching Comparative Adjectives

- a. A comparative adjective compares the same attribute between 2 nouns. For example, let’s say you have two trees, an oak tree and a maple tree that are



different heights. If you are curious, you might ask, which tree is taller than the other? In this case, “taller” is a comparative adjective, which makes sense since we are asking to compare two nouns. We would reply “the oak tree is taller than the maple tree.” This means that the oak tree has a greater height than the maple tree. Again, “taller” is the word we are using to compare the trees and their height. Remember that **comparative adjectives allow us to compare two things to one another.**

3. Building a Comparative Adjective

a. Background

- i. No matter how long they are, words that are adjectives all function in the same way. “Tall” has one syllable, for example, but “pretty” has two syllables, and “beautiful” has three, but they all function the same when in their original form. Building comparative adjectives is a more complex process.
 - ii. The rules might be confusing, but once you get used to the system, you will realize that building comparative adjectives is not difficult. The first step to building a comparative adjective from a regular adjective is thinking about how many syllables the regular adjective has.
- b. For an adjective that has one syllable - add the ending –er to the end of the adjective For example, “tall” becomes “taller.”
 - c. For an adjective that ends in y and has two syllables - drop the y and add –ier. For example, “pretty” becomes “prettier,” and “early” becomes “earlier.”
 - d. For an adjective that has two syllables and does not end in y - add the word “more” For example, “purple” becomes “more purple.”
 - e. For a word with three syllables, we use the word “more” before the adjective.
 - f. For example, “beautiful” becomes “more beautiful.”

4. Practice with Comparative Adjectives

- Review building comparative adjectives with the students. Choose a few adjectives to practice with. For example, tart, juicy, delicious. Count syllables, look for “y” endings, follow the rules above, and write or say the results.
- Have students complete the worksheet.

5. Kitchen Prep

- d. Read the title page together.
- e. Identify and gather ingredients.
- f. Gather tools.
- a. Discuss kitchen safety, in particular washing hands after working with eggs. (Visit Raddishkids.com/pages/safety)



6. Prepare Salted Brownie Crunch

- a. Ask children to read or describe each step.
- b. Give each child a turn cutting, measuring, mixing, etc.
- c. When it is ready eat, taste and share!
- d. Play a game of eating the Salted Brownie Crunch and comparing its sweetness and saltiness to other foods. For example, “the Salted Brownie Crunch is sweeter than an apple”. “Popcorn is saltier than the Salted Brownie Crunch.”

Lesson 3: Roasted Tomato Soup with Umami Croutons and Evaporation Activities

Learning Outcomes

- Students will learn that evaporation of water from foods concentrates the flavor.
- Students will put flavor concentration into practice by roasting tomatoes.
- Students will learn the scientific definition of evaporation.
- Young students will do an experiment that helps them to understand how clouds take part in evaporation.
- Older students will do an experiment that involves measuring evaporation over time.
- Students will learn the culinary term umami and be able to identify which foods have umami flavor.
- Students will prepare and enjoy soup and croutons.

Materials

- Recipe guide and ingredients and tools listed within

Cloud Activity

- One cotton ball for every student
- Flat pan or container filled with about ½ and inch of cold water

Evaporation Measurement

- Two clear identical containers
- Masking tape
- Water
- Permanent marker
- Plastic Wrap
- Optional- ruler and graphing materials for older students



1. Cloud Activity

- a. Give each child a cotton ball to hold. Tell them to pretend that they are holding a cloud.
- b. Ask them how the cloud feels: heavy or light, soft or hard?
- c. Instruct the children to place the "cloud" (cotton ball) gently over the pan containing cold water. Explain that water that has evaporated has traveled up to the cloud and it is a lot colder up in the sky, so the vapor turns into water, and it is filling up the cloud.
- d. Ask: Can you see the "cloud" (cotton ball) filling up with the water?
- e. Ask the children to gently pick up the "cloud" (cotton ball) from the pan.
- f. Ask: How does the "cloud" feel now? Light or heavy? Warm or cold? What is happening with the water? Yes, the water is dripping from the "cloud". Why? The cloud cannot hold all that water, is too, too, heavy. What do we call when water falls from the clouds because they are too heavy with water? Yes, you are right, rain! It is raining! And what happens to the water? Yes, it is coming right back into the pan, and the pan could be a stream, river, ocean or the ground.

2. Container Experiments

- a. Fill two clear, identical containers about one-third to one-half with water.
- b. Cover one with a lid or plastic wrap and leave the other open.
- c. Mark on the outside of the containers at the water lines, using masking tape so you can record the time.
- d. Have children predict what will happen to the water in each container after 24 hours. Mark and date a new line every day.
- e. For older kids, measure the height of the water and record it on a chart. Check the containers the next day and continue checking and recording until one has completely evaporated.
- f. Alternatively, place open containers of water in different areas under various conditions, such as on a sunny window sill, in a cool closet, under a shade tree and on a sunny porch, to observe which one evaporates the fastest.
- g. Discuss what is happening and why. Older children can graph the results.

3. Kitchen Prep

- a. Read the title page together.
- b. Identify and gather ingredients.
- c. Gather tools.
- d. Discuss kitchen safety, in particular oven safety. (Visit Raddishkids.com/pages/safety)



4. Prepare Roasted Tomato Soup with Umami Croutons

- a. Ask children to read or describe each step.
- b. Give each child a turn, cutting, mixing, etc.
- c. Have student taste a raw tomato then taste one after it has roasted. Can they taste the difference that evaporation makes?
- d. While the tomatoes are roasting and the croutons are toasting read the Fun Bites section “What is Umami”

5. Soups On!

- a. Eat, taste and share!

Comparative Adjectives allow us to compare two things to one another

| Adjective | Number of syllables | Comparative Adjective | Use it in a sentence |
|------------------|----------------------------|------------------------------|--|
| crispy | 2 with a y | crispier | The potato chip was crispier than the cracker. |
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