

Substitution Lab

Summary

Each unit in the class is assigned to cook brownies making a substitution with one or more of the ingredients as identified. Each unit will then compare their results.

Main Core Tie

Food And Nutrition

[Strand 2 Standard 2](#)

Time Frame

1 class periods of 90 minutes each

Group Size

Small Groups

Materials

Handouts:

Quiz

Substitution lab

Ingredients needed for the lab for the entire class:

10 sq. (1 oz.) unsweetened chocolate

6 tbs. cocoa

1 1/4 cups shortening

1/2 + 1/3 cups butter or margarine

2 tbs. peanut butter

6 cups sugar

1 dozen eggs

3 tsp. vanilla

3/4 cup whole wheat flour

3 1/2 cup flour

2 1/2 tsp. baking powder

2 3/4 tsp. salt

2 1/2 cups nuts (opt.)

1/4 cup peanuts

Labels for each of the different types of brownies prepared - Standard recipe, Whole wheat flour, Margarine, Fudgy Brownies, Peanut Butter Brownies, and Cocoa.

Background for Teachers

The teacher will need to know substitutions for ingredients called for in recipe. Necessary ingredients will need to be available for lab.

The teacher needs to make labels on 3X5-inch cards identifying the different brownies with the substitution used.

Student Prior Knowledge

Understanding proper substitutions and amounts for one ingredient to another.

Intended Learning Outcomes

Students will identify how one ingredient can be substituted for another by demonstrating proper measurement and preparation techniques for acceptable food products when comparing appearance, flavor, and texture.

Instructional Procedures

Substitution Lab: The students will be assigned to prepare a regular recipe for the Brownies by substituting one or more ingredients so the students can compare the difference in appearance, flavor and texture.

Be specific on the pan that is used. All brownies are made in the 8X8-inch sq. cake pan with the exception to the Fudgy Brownie and it is made in the 9X9-inch sq. cake pan.

The fudgy brownies take 20 - 25 minutes to bake and the others take 30 - 35 minutes.

Nuts are optional except for the Peanut Butter Brownies.

Be careful when melting chocolate so it will not burn. Use low heat.

(Some incidences occur when you have a personal preference to an ingredient or when you do not have a particular ingredient on hand. It is convenient to know where one can find the Emergency Substitutions in a Cookbook and use them in preparing an acceptable food product.)

Allow the students enough time to prepare the recipe and clean-up. The recipe can be simply made in the 2 quart saucepan with a spoon without the use of the hand mixer, etc. It shouldn't take more than 15 - 20 minutes to complete.

While the brownies are in the oven, hand out the quiz for the students to take as a review on what has been taught the last couple of weeks. Correct the quiz.

When the brownies are done, let them cool for a few minutes. Have the students cut them into pieces for the number of students in lab. If you have 24 students, cut them in columns and rows, 5 by 5 giving you 25 pieces. Put the brownies on a large plate.

Once all of the brownies are labeled and ready to eat, have the students get a plate and form a line to take one of each of the brownies. With the thumb on the plate begin putting the first brownie to the right of your thumb forming a circle of brownies ending with the last brownie to the left of the thumb. When all of the students have completed taking one of each of the brownies, you are now ready to compare them as a class. Tell the students to take a small bite of the first brownie. This is the standard recipe and will be used to compare all of the other brownies.

Then take a bite of the second brownie. This is made with whole wheat flour. How does it compare? It will probably be drier and more coarse and not as preferred as the standard.

Then take a small bite again from the first brownie and then a bite from the third brownie. This one is made with butter or margarine and not shortening as in the standard one. Many of the students will prefer this one as it is more moist, flavorful, etc.

Again, have the students take a bite from the first one and then take a bite out of the last one which is made from cocoa. Many people have cocoa available at home on the shelf but not always unsweetened chocolate. The students will like both of these and it will be hard to tell the difference between them.

Then have the students take a bite out of the fudgy brownie. This will be the class favorite as it is gooey and more flavorful and to their liking.

Then have the students take a bite out of the Peanut Butter Brownie. If the students likes the combination of chocolate and peanut butter, they will like this one. It would be good if you could frost these with some chocolate frosting with a small amount of peanut butter in it for added flavor.

Ask which one they preferred overall and why. They could probably eat any one of them and enjoy them, especially if they had frosting on the top, then no one could tell the difference. Have the students clean-up before leaving at the end of class.

Authors

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