



# Johnny Appleseed Week

STEM Activity - pg1



## Apples and Potatoes

Approximate Time Required to Complete the Project

- Less than 1 hour for the experiment, less than 6 hours for presentation preparation and write-up

Objective

- To better understand your sense of taste and how your taste buds are involved in this fundamental ability.
- To explore the interaction between your nose, mouth, and brain when tasting a new food or drink

Materials

- Small pieces of peeled potato (uncooked)
- Small pieces of peeled apples
- Two bowls or other containers
- Paper and pencil/pen for recording notes and observations
- Blindfold (optional)

Introduction

About 75% of what we perceive as taste in our mouths is due to our sense of smell. Our taste buds, located on our tongue, can detect sweet, sour, bitter and salty foods. Normally, when we put food or drink in our mouth, small odor particles travel up the passageway to our olfactory receptors at the top of our nasal cavity. These receptor cells give our brain additional information that helps determine the characteristics of the food or drink we are consuming. If we plug our nose or have nasal congestion then this chemical pathway is blocked and we primarily rely on our tongue's taste buds. Without the additional, very powerful, messengers to pass information to our brains most of our food and drinks will taste the same!





# Johnny Appleseed Week

## STEM Activity - pg2

### Research Questions

1. Using a piece of apple, can you identify where on your tongue your 'sweet' taste buds are located?
2. If you had to classify your potato under one of the four primary tastes sensed by your taste buds, which would you pick?
3. Normally, do an apple and potato taste similarly or different to you? How would you describe the taste of each?
4. When your nose is pinched shut, do an apple and potato taste similarly or different to you? How would you describe the taste of each?
5. Considering your responses to questions 3 and 4, do you think your nose contributes to your sense of taste? If yes, what characteristics were you able to taste when using your nose normally?

### Key Words

- Olfactory receptors – specialized cells located in the roof of your nose that detect smell
- Nasal passage – Air-filled pathways that connect your nose to your throat.

### Experimental Procedure

1. Select one potato and one apple. Peel each and cut into small, similar-sized pieces (one or two bites each).
2. Place the potato pieces in one bowl and the apple pieces in a second bowl.
3. Recruit a volunteer who can assist you in your experiment for 10 to 15 minutes.
4. With your eyes closed and nose pinched shut, ask the volunteer to hand you one piece of apple or potato without telling you which he/she chose. (Make sure they know what they are handing you and write it down.)
5. First, touch the piece of food to several places on your tongue to see if it tastes different and explain what you taste to your volunteer. Ask the volunteer to take notes on your observations.
6. Then, chew the piece of food and notice what it tastes like. Explain the taste to your volunteer as they take notes.
7. Make your best guess as to whether item #1 was an apple or potato.
8. Repeat steps 4-7 with a second item. Make sure the volunteer selects one piece of apple and one piece of potato.
9. Keeping your eyes closed, repeat steps 4-8 above without pinching your nose shut. Observe any differences in taste and make your best guess at identifying if item #1 or item #2 is an apple or potato. Again, ask your volunteer to take notes.
10. If presenting this project at a science fair it may be fun to have bowls and toothpicks of pre-diced apples and potatoes for visitors to experiment with.

