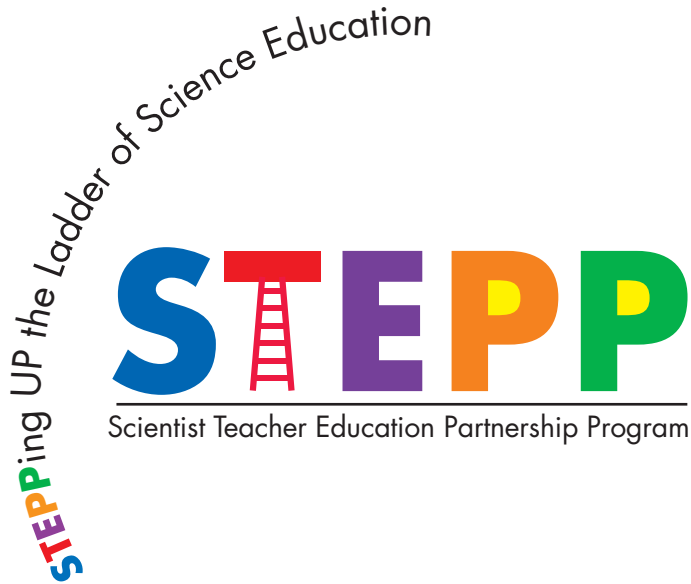


Function Intermediate Vision



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Our Senses & The Environment

Lesson Two

In a Nutshell

This lesson is designed for students to explore how our senses respond to information from the environment. Students will see that our brain plays a major role in helping our senses to function (respond). By examining the human eye's response to light and reactions to various smells (stimuli) the students should see that their senses are responding to information that has been presented from the environment.

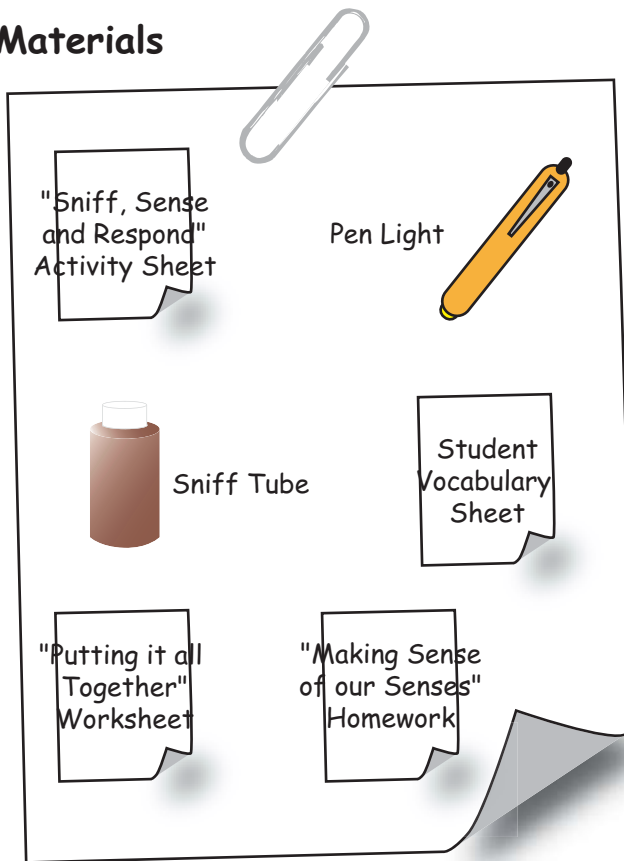
Objectives

Students will begin to understand that when something from the outside environment (stimulus) triggers one or more of our senses (sense organ), the sense(s) and the brain work together and a reaction (response) takes place.

Students will see that different information from the environment produces different reactions (responses) from our sense organs.

Students will understand that the brain must interpret the information provided from the environment in order for our senses to respond.

Materials



Vocabulary

Sensory Receptors - A cell or group of cells contained in the sense organs that receive stimuli from inside or outside the body.

Stimulus - Information obtained from the environment or our body by our senses. **For example, the sound of a bell ringing can be a stimulus.**

Sense Organ - Body part specialized to receive sensory information: eye, ear, nose, tongue, skin.

Response - Something that is done in reaction to a stimulus. **For example, covering our ears because the sound from a bell is too loud is one response to the stimulus of the ringing sound.**

Reflex - An automatic reaction that happens incredibly fast, before you have time to think about it.

Vocabulary For Teachers

Sensory Receptors - A cell or group of cells contained in the sense organs that receive a stimuli from inside or outside the body.

Stimulus - Information obtained from the environment or our body by our senses. **For example, the sound of a bell ringing can be a stimulus.**

Sensation - The detection of simple stimuli by any of the senses.

Sense Organ - Body part specialized to receive sensory information: eye, ear, nose, tongue, skin.

Sensory Neuron - A type of cell that transmits impulses from a sense organ or receptor toward the central nervous system.

Response - Something that is done in reaction to a stimulus. **For example, covering our ears because the sound from a bell is too loud is one response to the stimulus of the ringing sound.**

Reflex - An automatic reaction that happens incredibly fast, before you have time to think about it.

Note to Teacher

When our senses respond it is because we have received information from the environment that has been interpreted by the brain. The process begins when our sense receptors detect a sensation from the environment. Immediately several sensory receptors rush information to the brain. The brain interprets the information that has been sent and the sense organ then responds in a particular way.

Procedure

Activity 1

1. Begin this activity by having students get into teams of two. Explain to the students that they will be observing one another's pupils (dark area in the center of the eye). **Tell student that it is very important that they follow the directions carefully so that they will be able to observe a change in one another's eyes.**
2. Have one student simply look at the pupils (center of eyes) of their partner. Mentally note what size the pupil is. (In a classroom setting the center of the eye (pupil) should be relatively small).
3. Once this observation has been made, pass out pen lights, shut off the classroom lights and have the partner tightly close his/her eyes for approximately thirty seconds.
4. The observing partner should time this and direct the partner to open his/her eyes at the end of the thirty seconds.

5. Immediately when the partner opens his/her eyes the observing partner should shine the pen light **toward** (not directly in) the partner's eyes and look directly into his/her partner's eyes. Observe the size of the pupil (center of the eye). **(At this point the students will see that the pupil is larger than when beginning this activity and as the light from the pen light enters the eye, the pupil immediately decreases in size).**
6. Turn the lights back on and allow partners to switch so all students have a chance to engage in the activity and to be an observer.
7. When all students have tried both roles, ask the class how many of them noticed a change in the pupil when the eyes were first opened. **(All students should respond that they noticed a difference. In the event that a difference was not noted either the student observing did not focus and retain the first observation or the student did not close his/her eyes tight enough and light was entering the eye while the eye was closed.)**

Activity 2

1. Tell the class that we will now try another activity that will rely on a sense other than our eyes. Pass out "Sniff, Sense, and Respond" worksheet (pg. 13) to each student. Pass out three different "sniff tubes" to each **pair** of students. Some teams will receive tubes 1,2,3 and others will receive tubes A,B,C.
2. Explain that one student should **close his/her eyes** (so that he/she cannot see the label on the tube or what is inside the tube) while the other student places one "sniff tube" directly under their partners nose. Allow the partner to sniff while observing the reaction your partner has. The partner holding the sniff tube should be focused on the reaction, (the face his/her partner makes,) as this is the **RESPONSE** from the stimulus (the contents of the "sniff tube").
3. For each "sniff tube" presented the partner NOT sniffing should complete the appropriate step on the "Sniff, Sense, and Respond" worksheet. When all three "sniff tubes" have been used switch tubes with a team that has numbers or letters different from your set of tubes and repeat procedure with partners switching roles.

Name: _____

Sniff, Sense and Respond

First Sniff (this was _____)
(write what label was on the sniff tube)

Complete your partners face.
Make sure to include the
Expression on his/her face

4. When the activity is complete have the class share some of the facial expressions they saw their partner make during the activity. Ask the class if they think your brain had anything to do with your responses to the smells.
5. Explain to the class that our facial expressions were created in response to information that the brain interpreted. The process begins when parts of our senses (sense receptors) receive information from the environment. Immediately several sense receptors rush information to the brain. The brain interprets the information that has been sent and the sense organ then responds in a particular way. In the case of our facial expressions our brain remembered liking or disliking the smell presented from previous experiences and responded accordingly.
6. Pass out the “Putting It All Together” worksheet (pg.14) and the “Student Vocabulary” worksheet (pg.16).
7. Ask the students to think about both activities they have done today and decide what the stimulus, sense organ and response was for each. The teacher should chart this information on the board so the entire class can see and complete their worksheet with the class. (See below for teacher answers/example)
8. Pass out “Making Sense of our Senses” worksheet (pg.17). Re-explain the terms **STIMULUS**, **RESPONSE** and **SENSE ORGAN**. Allow students to use all worksheets from this lesson to complete the worksheet, “Making Sense of Our Senses” in class or for homework. (This sheet will be reviewed at the beginning of lesson four.)

Mystery Scents

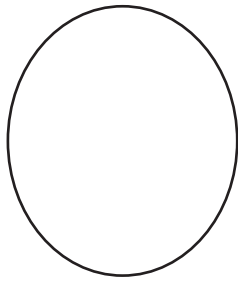
A = molasses
B = vanilla
C = baby powder

1 = vinegar
2 = cloves
3 = coffee

Name: _____

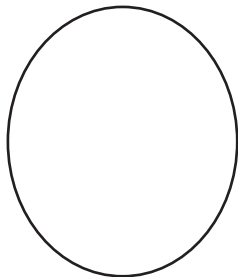
Sniff, Sense and Respond

First Sniff (this was _____)
(write what label was on the sniff tube)



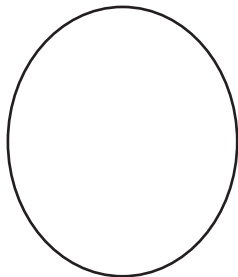
Complete your partners face.
Make sure to include the
Expression on his/her face

Second Sniff (this was _____)
(write what label was on the sniff tube)



Complete your partners face.
Make sure to include the
Expression on his/her face

Third Sniff (this was _____)
(write what label was on the sniff tube)



Complete your partners face.
Make sure to include the
Expression on his/her face

Name: _____

Putting It All Together

Directions: Think about the activities we just completed. Complete the below

ACTIVITY ONE: Pupil Growth & Decrease

Stimulus -

Response -

Sense Organ -

ACTIVITY TWO: Sniff, Sense and Respond

Stimulus -

Response -

Sense Organ -

Putting It All Together

Teacher Answer Key

Directions: Think about the activities we just completed. Complete the below

ACTIVITY ONE: Pupil Growth & Decrease

Stimulus – light entering the pupil of the eye

Response – the pupil grows when the eye first opens as it needs light and then to immediately decrease in size as the light in the room continues to enter the eye.

Sense Organ – the eye

ACTIVITY TWO: Sniff, Sense and Respond

Stimulus – a variety of smells (mothball, vanilla, bubblegum)

Response – varied upon the smell. Usually a facial response to the smell is noted. For pleasant smells (vanilla, bubblegum) a happy face, but for the mothballs usually an unhappy face response is noted.

Sense Organ – although the face changes expression for each

Vocabulary for Students

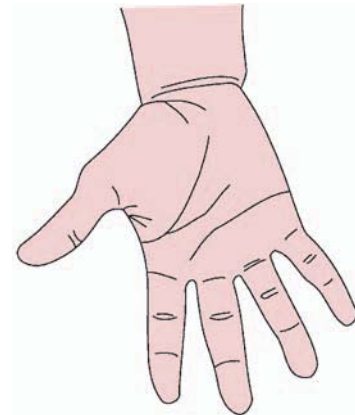
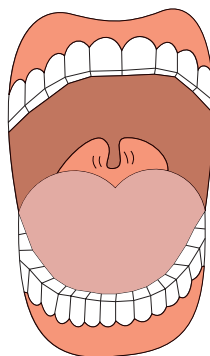
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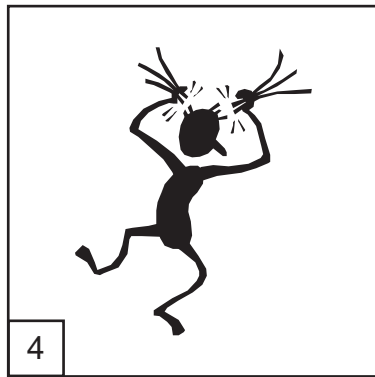
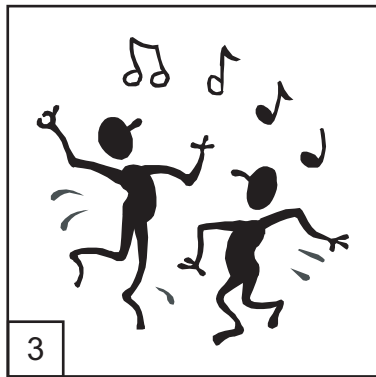
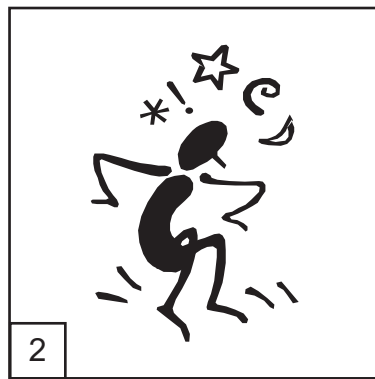
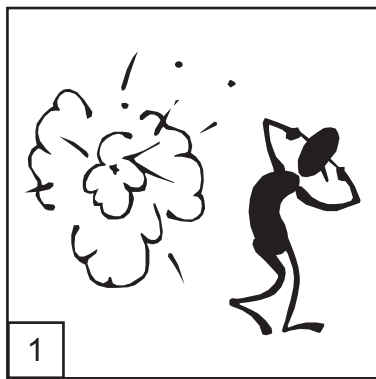


Name: _____

Making Sense of Our Senses

Below are four cartoon drawings. Each drawing contains a cartoon person responding to a stimulus. Select TWO cartoons and use your creativity to explain what the stimulus is, what sense organ is being triggered and what the response is. Write the answer to your first choice on the front of this sheet and write your answer to your second choice on the BACK on this sheet.

When you have made your guesses you will go over this sheet with your class. Be prepared to share answers with your classmates!



I have selected picture number _____

I think the STIMULUS is:

I think the SENSE ORGAN that is triggered is _____

I think the RESPONSE is: