

The Five Senses and Corresponding Sensing Organs



Kindergarten

The Five Senses

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Description of Students:

This eight day unit on the five senses was designed for use in a kindergarten classroom. Our intention was to create a unit in which five and six year old students would have numerous opportunities to learn about the five senses and their corresponding sensing organs through hands-on activities. The students will learn how they experience our world by using each of their five senses in different lessons throughout the unit. When creating this unit we kept in mind that no two classrooms are identical. Our activities are appropriate for gifted students as well as for students with special needs. Each of our hands-on lessons was designed to engage and educate a wide variety of students. In addition, this five senses unit was designed for both novice and experienced teachers. Our lesson plans and activities are intentionally quite detailed and could even be used by a substitute teacher. Overall, we wanted to create a unit on the five senses that could easily be integrated into any kindergarten classroom.

Theme/Question:

The theme of our unit is the five senses and the corresponding sense organs. Using the wisdom from Rob Traver's article, *What is a Good Question?*, we developed our guiding questions to be open-ended, non-judgmental, and have an intellectual bite. Our guiding questions for each lesson tend to be questions that make students think about why they have their sense organs and what life would be like without them. We believe these guiding questions will interest and intrigue students because they all rely on their senses and sense organs every day. Two examples of guided questions featured in our unit are: "Why do you have two eyes?" and "What would life be like if you could not smell?"

Virginia Standards of Learning:

K.2 Students will investigate and understand that humans have senses that allow one to seek, find, take in, and react and respond to information in order to learn about one's surroundings. Key concepts include:

a) five senses and corresponding sensing organs (taste-tongue, touch-skin, smell-nose, hearing-ears, and sight-eyes); and

b) sensory descriptors (sweet, sour, bitter, salty, rough/smooth, hard/soft, cold, warm, hot, loud/soft, high/low, bright/dull).

National Science Education Standards:

Teaching Standard A: Teachers of science plan an inquiry-based science program for their students.

Teaching Standard B: Teachers of science guide and facilitate learning.

Teaching Standard C: Teachers of science engage in ongoing assessment of their teaching and of student learning.

Teaching Standard D: Teachers of science design and manage learning environments that provide students with the time, space, and resources needed for learning science.

Teaching Standard E: Teachers of science develop communities of science learners that reflect the intellectual rigor of scientific inquiry and the attitudes and social values conducive to science learning.

Content Standard B: Physical Science Standard: Properties of Materials and Objects

Content Standard C: Science as Inquiry Content Standard: Abilities Necessary To Do Scientific Inquiry

Connectivity:

The sequence of this unit on the five senses was specifically designed to have connections between the daily lessons. Several of the lesson plans have the next day's sense as the extension activity in order to explicitly show connections between the senses. For example, day seven's lesson on smell connects to day eight's lesson on taste through the extension activity of having the student's taste a peppermint with their nose plugged then unplugged. These activities help students realize the connectivity between their five senses and corresponding sense organs. In addition, having an introductory day where each of the senses is briefly covered allows the students to easily see the connection between the senses.

Our five senses lessons are extremely relevant to the lives of our kindergarten students. One great feature of our unit is how easily the majority of kindergarteners will be able to relate to the activities for each of the five senses. It is our intention that our guiding questions will capture the interest of our students by being directly related to their own personal lives. Our guiding questions are designed to motivate students to want to find out the answer to questions such as, “What would life be like if you could not taste?” In kindergarten it is quite important for the student’s to be exposed to lessons that are relatable and in the realm of their own experiences and we believe our unit does this successfully

Nature of Science:

All eight of the lessons in our five senses unit address the nature of science as related to kindergarten. In each of the lessons the students conduct investigations using one of their five senses. Our lessons also emphasis student creativity and we never endorse the use of one scientific method. The students are given directions in each lesson, however, how they choose to describe and investigate each sense is their own personal choice. For example, in day seven’s lesson on smell the students draw a picture that represents the smell of each one of the extracts. We will never tell the students that there is only one correct answer or only one correct way to determine the smell of each of the extracts. Throughout our unit we encourage the student’s to develop and ask simple questions. In addition, we encourage students to communicate information about the world around them by having them respond to questions.

Inquiry-Based Activities:

As instructed all eight of the lessons in our five senses unit are inquiry based activities. Also, all eight of our lesson plans have the students engaging in hands-on activities. On Day 1, the students will draw pictures of each of the five senses. On Day 2, the students will categorize different sounds using their voices and objects in film canisters. On Day 3, the students will use four identical bottles with different amount of liquids in them and put the bottles in order of pitch. On Day 4, the students will participate in a hunt around the classroom for objects based on size, color, and shape. On Day 5, the students will collaboratively try to drop a penny into a cup with one eye covered. On Day 6, the students will investigate objects hidden inside boxes using their sense of touch. On Day 7, the kindergartners will attempt to identify particular smells without being able to see what they smell. Finally on Day 8, the students will have the opportunity to taste different foods and connect the descriptions sweet, bitter, salty, and sour with the flavors tasted. A beneficial aspect of our unit on the five senses and corresponding sense organs is the heavy reliance on hands-on activities. We believe this aspect will increase the engagement and interest levels of kindergarten students. Over 50% of our lessons use authentic, natural materials. In fact, most of our lessons use the child's own senses and natural objects from their own environment in order to conduct investigations.

Technology and Safety:

Safety is of the utmost importance when incorporating this unit on the five senses into the kindergarten classroom. Many of our lessons are taught by the classroom teacher as well as the teacher's

aide in order to provide additional safety measures. On Day 1 when the students will be listening to a read aloud and drawing pictures the safety precautions are quite minimal and could easily be taught solely by the classroom teacher. Similarly, the lesson on Day 2 is very safe and only requires the students to use their own voices and objects in film canisters. This lesson could also be taught by only the kindergarten classroom teacher. On Day 3, the students will be working with bottles filled with liquids. The teacher and teacher's aide should ensure that students are careful when moving around the bottles. In addition, although the liquids should not be inhaled by the students they should be safe to drink in case a student drinks out of the bottle. On Day 4, several safety precautions should be taken in order to ensure an effective and safe lesson. The students will hunt around the classroom for particular objects. The teacher should remind students to walk around the class, use their inside voices, and stay out of areas that may be unsafe or hazardous. The safety precautions taken will also depend on the composition of the classroom and how well the children are able to follow directions. On Day 5, student safety must be closely monitored by both the teacher and the aide to ensure students do not get harmed. This lesson requires one child to cover their eye with gauze while instructing the other child on when to drop a penny into a cup. The teacher must make sure that students are careful not to accidentally poke their eyes when covering it with gauze. In addition, when the children are blindfolded for the extension activity they should be in an open area, such as the school gymnasium. Also, each child should have a designated place in the open area to avoid student collisions. Since this lesson involves the eye, students should also wash their hands after completing this activity to reduce the spread of

germs. On Day 6, extreme safety precautions should not be necessary because the students will only be investigating objects hidden within boxes. On Day 7, the students will smell a variety of extracts and safety measures should be taken in advance of this lesson. To make sure there are no students who are allergic to any of the extracts used during the lesson a signed permission slip should be signed by each parent before the children participate in this activity. In addition, the teacher and teacher's aide should monitor the smelling stations and remind students not to taste the extracts. Also, when the students taste the peppermint candy they should be sitting at their seats in order to avoid students from choking on the candy pieces. Similarly on Day 8, the students will need signed permission slips from their parents or guardians allowing them to participate in the tasting activity. The teacher should make sure that none of the foods for tasting would cause an allergic reaction in any of the students. Students should be reminded to slowly chew any of the food they put in their mouths. Teacher and teacher aide should closely monitor student behavior during this lesson.

Due to the hands-on nature and use of natural materials in this unit on the five senses, technology was not an emphasis. Almost all of our lessons plans require the students to use one of their five senses and some other material to help them understand the use and importance of the five senses and their corresponding sense organ. Technology integration can be valuable and effective; however, we did not feel it would add to the students' understanding of the five senses.

Rationale

Choosing to create a module about the five senses and object descriptions based on the Virginia SOLs K.2 and K.4 was an easy decision. In all likelihood, scientific investigation is very new to kindergarteners who have had little to no experience, yet to progress in their scientific learning they need to develop a specific vocabulary which they will employ as they use their senses in investigations. In addition, it can be hard for an adult who has forgotten what it is like when everything around you is fresh and new to imagine the need to explain to someone else about his/her senses. It may seem so automatic to know you use your ears for hearing and nose for smelling, but young children may not understand how they experience things. Through this module, students will learn how to better understand their senses and sense organs which will add to their future success in other activities.

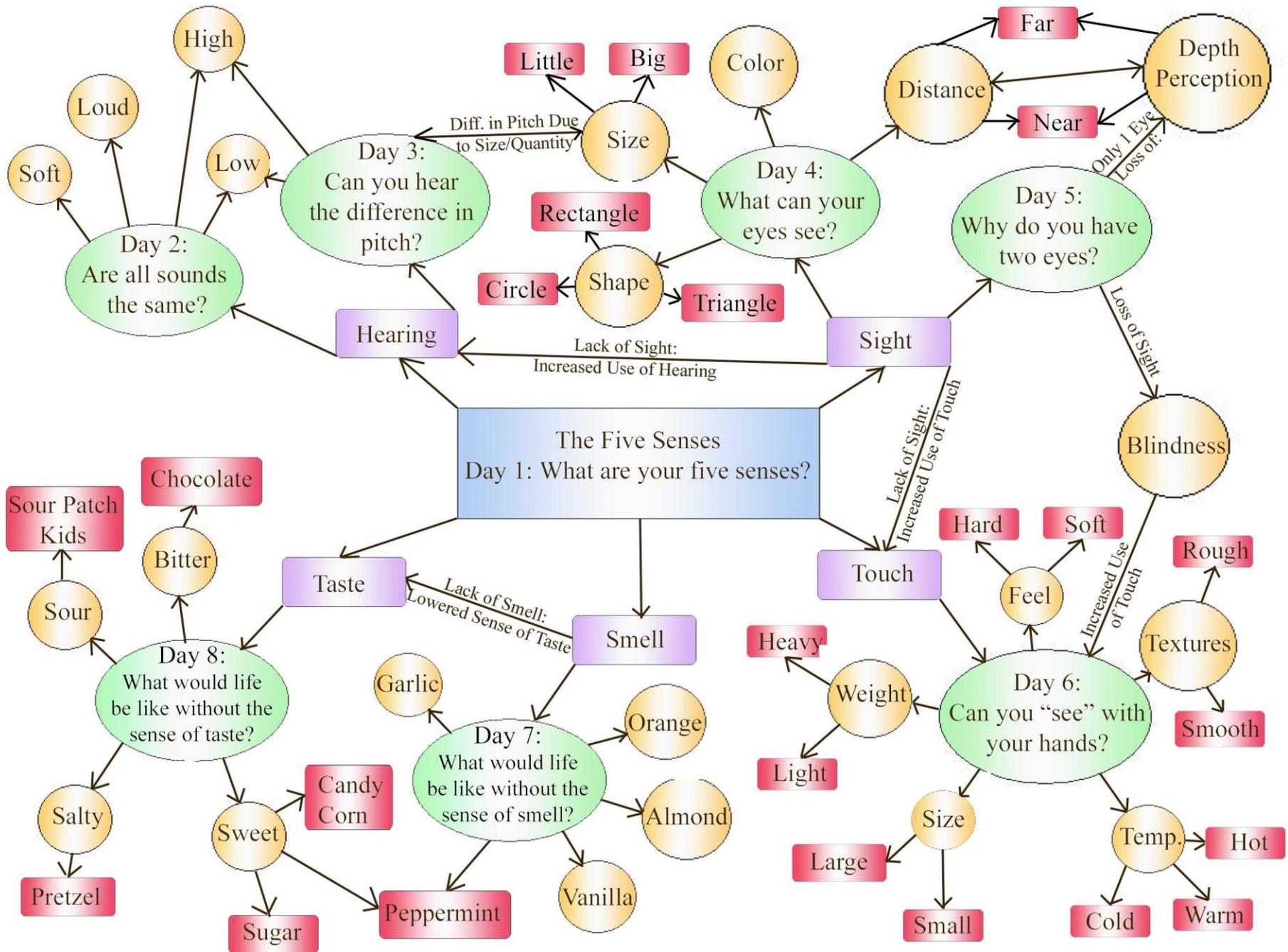
There was a great variety of ways to approach the SOL covering the senses. Truly, everything that students do involves the use of their senses in some way or another. But we sought to create activities within these lessons which would blatantly demonstrate the use of one particular sense at a time over the others. We wanted to draw such strong attention to the senses individually that students could be confronted with a new way of considering that particular sense, which they might have otherwise not noticed. But our ultimate goal was not to examine the senses in complete isolation. Once a foundation in one sense was built, we felt it was very important that a connection be made among the senses because they do all work in conjunction with one another. For example, the use of a peeled orange in one of the mystery boxes for the sense of touch

also gave students the opportunity to discover how their sense of smell can also help them when they cannot see an object and it is difficult to identify by touch.

SOL K.4 has a great deal of components and related descriptive words associated with it. Many of these words, such as *rough*, *hard*, *small*, and *heavy*, are likely already familiar to students, but once again, we wanted to create activities in which students could use these words and consider how they can apply to the world they observe around them. For example, students might not think something can be both smooth and rough at the same time. However, feeling the geode during the mystery box station for touch would give them this experience and expand their use of the vocabulary. In other ways, the lessons in our module introduce or more strongly establish some descriptive words, such as *bitter* and *sour*, which students may have less experience using. For example, students might be accustomed to thinking of tastes as *good* or *bad*. But by having first hand experience with very distinctive flavors in this module, they can establish a better understanding of the word *bitter* and its associated flavor.

To give our students the most authentic experiences possible, all of our lessons involve hands-on activities in which the students are investigating through inquiry. Most of our SOL topics will be intrinsically interesting to students, but actually getting to move around the classroom and interact with authentic materials makes the learning much more meaningful than if students were merely lectured and tested for comprehension. Additionally, some topics, such as taste, seem impossible for students to really gain a genuine understanding in any way other than through direct experience and investigation.

We believe providing our students with a strong foundation in these particular SOL objectives will enhance their future learning. Using their senses is the basis of performing scientific observations and investigation, so we feel our students will take what they have learned in this module and apply it throughout their educations and their lives.



Topic: The Five Senses
 NSES: Teaching Standards A-E
 Content Standards A, B, & C

Date: Day 5 of Unit
 Grade level: Kindergarten

SOL: K.2 Students will investigate and understand that humans have senses that allow one to seek, find, take in, and react or respond to information in order to learn about one’s surroundings. Key Concepts include a) five senses and corresponding sensing organs (taste – tongue, touch – skin, smell – nose, hearing – ears, and sight – eyes)

Daily Question: Why do you have two eyes?

Subject: Sight and Seeing

Procedures for Learning Experience	Guiding Questions	Materials Needed	Evaluation (Assessment)	Approximate Time Needed
<p>Engagement: Ask students what they learned about their eyes the day before. Provide each child with a piece of paper rolled into a tube with a diameter of about half an inch. While modeling the steps, tell the students to hold the tube with one hand and place the tube in the space between their index finger and thumb of their other hand. Then tell them to look through the tube with one eye and at their free hand with the other. Ask them to make observations by doing drawings of what they see.</p>	<p>What did we learn our eyes can see? (Colors, shapes, sizes, positions, actions, etc)</p> <p>Why do you think we have two eyes?</p> <p>What did you see when you looked through the tube and at your hand?</p> <p>Why do you think it looked like this?</p> <p>Does your view change if you move your free hand farther from or closer to your face?</p>	<p>Pieces of paper, tape, paper for recording results, and pencils.</p>	<p>Students will be assessed based upon teacher’s observations of active participation in the review of the previous day’s lesson, proper behavior during short activity, and drawn recordings of observations.</p>	<p>5 to 8 minutes</p>

<p>Exploration: Students should be divided into partners and each set of partners should be provided with a marker, a target (see attached), a pencil, and two pieces of gauze. Each pair should have a place in the classroom where they have space to work. To begin, one student will be the Instructor and the other will be the Dropper. The Dropper should stand next to the target with the marker, and the Instructor should stand about 5 feet away. (It would be best to have the targets attached to the floor and a mark where the Instructor will stand to avoid confusion.) The Instructor should cover one eye with the gauze and hold it there, and then she/he will then instruct the Dropper to move the marker left, right, forward, or backward until she/he believes the marker is over the center of the target and then to drop the marker. The Dropper will place a numbered sticker next to the mark left on the target starting from 1 and going to 10 for ten trials. With a new target, the process will be repeated but the Instructor should use both eyes. Once this part is completed, the roles should be switched and the whole process repeated, each time with a new target. Have students score their targets by counting how many marks they made on each color of the target.</p>	<p>What was your score using one eye? Both eyes?</p> <p>Did you find any difference in your ability to hit the target using one eye as compared to both eyes?</p> <p>Do you think it was it easier to hit the target using one eye or both?</p> <p>Why might it be easier to hit the target when you use both eyes?</p>	<p>Four targets for each pair, pencil, marker, tape to mark the floor and place targets, and two pieces of gauze.</p>	<p>Students will be assessed on the completion of their tasks for the activity and contributions to the co-operative partner effort to analyze their results as observed by the teacher. Also, the teacher will assess the students for following directions and working together.</p>	<p>About 15 minutes.</p>
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<p>Explanation: Have students form a group in front of the dry erase board. Ask each pair to share their findings and state whether they hit the target more accurately using one eye or both. Tell students that because they have two eyes in the front of their heads, they have something called “stereo vision.” Ask students if they can make connections in their lives to other things “in stereo.” Draw on any connections students have to stereo sound. Tell students that each of their eyes sees something slightly different from their other eye. However, when both views get to your brain, they combine into one picture that is different from both of the originals. This allows us to see in three-dimensions, which means we can see that things take up space and are not only flat. This is what it means to have “stereo vision.” Show students illustration from http://www.vision3d.com/stereo.html.</p>	<p>What do you know about the word “stereo?” When have you heard it used?</p> <p>At the beginning of class, I asked why you think we have two eyes. Do you have any new ideas?</p> <p>How would only having one eye affect your life?</p> <p>How do you think scientists use their eyes? (Encourage that students use their eyes the same way as scientists!)</p> <p>How do you think stereo vision affected what you saw when looking through the paper tube?</p>	<p>Stereo vision Illustration (attached), dry erase board, and dry-erase markers should be around for additional drawing if needed.</p>	<p>Students will be assessed on their contributions to the class discussion through their work with their partner, their observed consideration and respectful treatment of other classmates’ contributions, and their stated insights into the engagement activity due to new knowledge.</p>	<p>About 10 minutes.</p>
<p>Extension: Students have now learned things their eyes can see (i.e. shapes, colors, sizes, actions, positions) and that their eyes work together to let them see 3D objects. To make students further consider how much they use their sight, bring the group outside and choose a student volunteer to walk along a path you have made with tape on the ground. Then ask the student to walk the path from memory blindfolded. Ask the students what other sense they think that could use to get around if they could not see. Bring them to another</p>	<p>Why is it hard to stay on the path when you cannot see?</p> <p>What other sense could you use to help you find your way?</p> <p>Why would bumps on the ground help someone find there way? What else could help them?</p>	<p>Tape, blindfold, egg cartons, and Japanese subway path picture (attached).</p>	<p>Students will be assessed on their responses to teacher’s questions and attentiveness during demonstration.</p>	<p>About 5 to 8 minutes.</p>

<p>path which is made of the bottom halves of egg cartons, and have the blindfolded child try to walk on this path. Show them a photograph of walkways for the blind in Japan (social studies connection/ see attached), and tell them that people can use touch to help them get around and that tomorrow we will learn more about touch. Allow all students to continue this activity at recess with supervision if necessary for time.</p>				
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Notes:

This lesson is to be part of a unit on the five senses and should follow lessons on hearing and an introductory lesson about sight. This lesson is meant to make students think about how important their eyes are, how their eyes work together, and how much they depend on their sight in the world. The extension in this lesson is meant to have students experience a lack of sight to get them thinking about the sense of touch. The concept of stereo vision might be beyond student comprehension, but students should take away the broader understanding that their eyes work together when they see.

Safety Notes:

It is important that students are careful when putting the rolled paper tube to their eyes so that they do not cause injuries. Be sure to warn students to be responsible with the items and that any dangerous behavior will result in sitting without participating. The teacher should also be sure to have students wash their hands before doing the Exploration if they do not supply the students with gauze. Touching their eyes with dirty hands can lead to the spread of conjunctivitis in the classroom. The Extension activity must be done in an open area. If the gymnasium is closer and more convenient, then that can be used. Wide hallways are also possible, but the teacher must be sure children are safe and supervised.

Differentiation Strategies:

Students should be placed in pairs of stronger and weaker students. Consideration should also be given to which students may not work together responsibly. Students who have vision impairments may be closer to the target during the activity. If certain students are more nervous to share their ideas, they can be prompted to show their target and just say if they did better or worse using one eye.

Resources:

Cooper, Rachel (2008). Stereo vision starts with two views. Retrieved November 22, 2008 from <http://www.vision3d.com/stereo.html>.

Neuroscience for Kids (2008). Sight (Vision). Retrieved November 22, 2008 from <http://faculty.washington.edu/chudler/chvision.html>.

Rubric: Day 5: Why do we have two eyes?

Assessing kindergarten student performance during activity about depth perception.



Day 5: Why do we have two eyes?

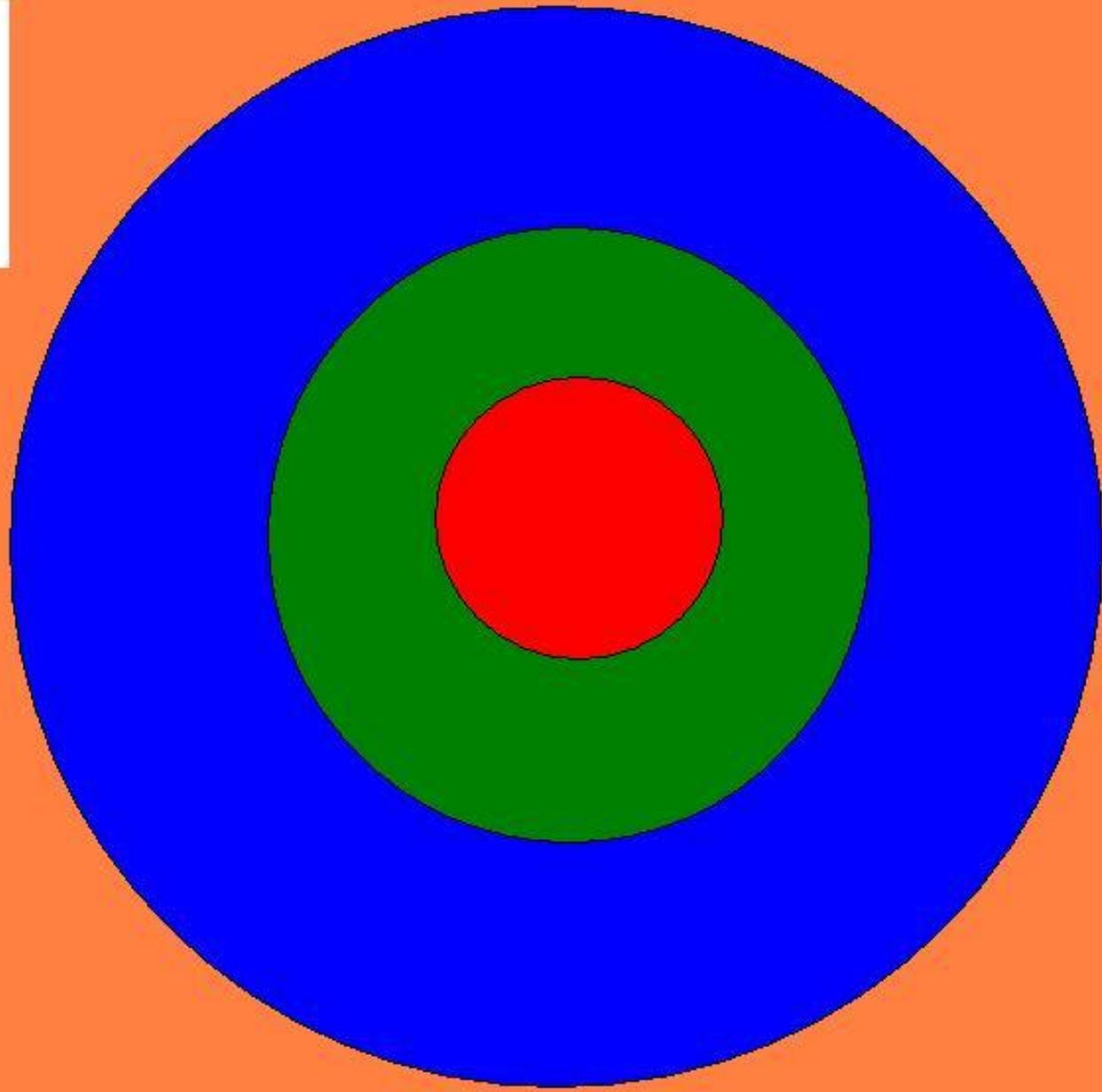
	Poor 1 pts	Good 2 pts	Excellent 3 pts
Works well with Partner Student cooperates with partner and works together to complete activity.	Poor Student did not cooperate with his/her partner, would not share materials, or take turns during activity.	Good Student mostly cooperated with his/her partner but needed to be reminded or redirected to do so.	Excellent Student cooperated with his/her partner and worked together to complete the activity.
Directions and Responsibility Student follows directions when given and behaves responsibly with materials.	Poor Student did not follow directions and misused the materials provided for the activity.	Good Student did not follow all directions or did not always use materials properly for the activity.	Excellent Student followed directions and behaved responsibly with materials for the activity.
Completion of Activity Marker dropping activity is complete and results are able to be described.	Poor Student did not complete the majority of the activity and did not attempt to look at results.	Good Student completed most or all of the activity, but did not try to examine the results.	Excellent Students completed the activity and worked with his/her partner to describe results.
Whole Group Participation Student contributes to the classroom discussion by being attentive and sharing ideas.	Poor Student was not attentive and behaved in a way that was both distracting to him/herself and others in the classroom.	Good Student was attentive some of the time and shared a few ideas.	Excellent Student was attentive and willing to share ideas.
Content Knowledge Student demonstrates understanding of content through discussion and participation in activities.	Poor Student demonstrates little understanding of the content knowledge.	Good Student demonstrates some understanding of content knowledge but still needs guidance.	Excellent Student demonstrates a strong understanding of content knowledge.

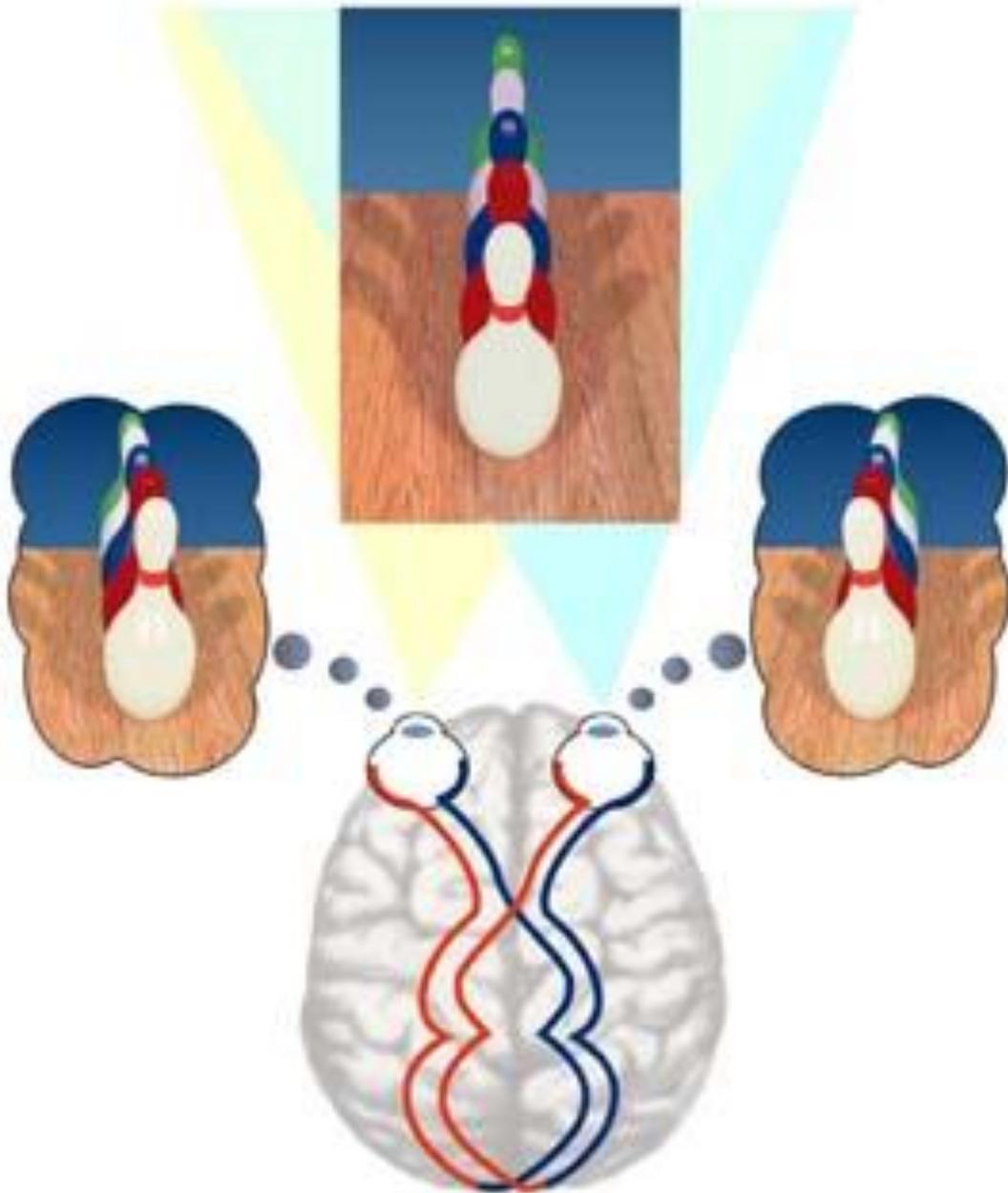
Red =

Green =

Blue =

Orange =





<http://www.vision3d.com/stereo.html>



<http://nostrumeo.blogspot.com/2007/08/japan-day-8-hachi.html>

Topic: The Five Senses
 NSES: Teaching Standards A-E
 Content Standards A, B, & C

Date: Day 6 of Unit
 Grade level: Kindergarten

SOL: K.2 Students will investigate and understand that humans have senses that allow one to seek, find, take in, and react or respond to information in order to learn about one’s surroundings. Key Concepts include a) five senses and corresponding sensing organs (taste – tongue, touch – skin, smell – nose, hearing – ears, and sight – eyes); b) sensory descriptors (sweet, sour, bitter, salty, rough/smooth, hard/soft, cold, warm, hot, loud/soft, high/low, bright/dull).

K.4 The students will investigate and understand that the position, motion, and physical properties of an object can be described. Key concepts include c) textures (rough/smooth) and feel (hard/soft); d) relative size and weight (big/little, large/small, heavy/light, wide/thin, long/short)

Daily Question: Can you “see” with your hands?

Subject: Touch and Feeling

Procedures for Learning Experience	Guiding Questions	Materials Needed	Evaluation (Assessment)	Approximate Time Needed
<p>Engagement: Ask students what it was like trying to find their way without seeing during the previous lesson’s extension. How did it help to have a bumpy path? Have the students sit in a circle with you and pass out these items one at a time to discuss: a smooth rock, a rough rock, a piece of sandpaper, a piece of poster paper, a piece of corrugated cardboard, a cotton ball, a piece of thick yarn, a piece of felt, and a metal spoon. Pass one item around the circle and ask students for words they know to describe how the item feels. Record these words on the dry erase board. Important words are: rough, smooth, heavy, light, hard, soft, long, large, small, etc. Tell students that they will be using their sense of touch to be scientists and try to discover the mystery items hidden in the boxes around the room.</p>	<p>Did it help to have a bumpy path to find your way during yesterday’s activity?</p> <p>What words do you know describes this item?</p> <p>Can you use more than one word to describe it?</p> <p>Would you call this heavy or light? Why or why not? (And other questions similar to this.)</p>	<p>A smooth rock, a rough rock, sandpaper, poster paper, corrugated cardboard, a cotton ball, thick yarn, felt, and a metal spoon</p>	<p>Students will be evaluated on the responsible handling of the items being passed around the circle and their contributions of descriptive words.</p>	<p>About 10 minutes.</p>

<p>Exploration: Set up five stations around the room. At each station, there will be a mystery box containing an unidentified item. (Each box should be slightly larger than the size of a shoe box. At one end, cut a hole large enough for a hand to fit inside. Cut the end off a clean sock and create a tunnel by attaching it to the inside of the box hole.) Inside each box, there is a different item: a partially peeled orange, a rubber glove, a geode, a bundle of yarn, and a metal measuring cup. Divide the students into groups of three or four. Assign each child a number 1, 2, 3, or 4 (if necessary). Give each group a packet that has a letter matching each box (A-E) and then send one group to each station. Tell the students that they each have thirty seconds to feel the object. Tell students that they must NOT take the item out of the box. The teacher will announce which student number will go and when it is time for the next student. Once each student has had a chance, give the students a few minutes to discuss when they felt and try to draw what they think it is on the matching sheet. Tell students that they need to think of words to describe what they felt to share with the rest of the class. Have the students go through all five stations in this way.</p>	<p>What words would you use to describe what you feel inside the box?</p> <p>Can you guess what is inside the box?</p> <p>Do you agree with your teammates about the item in the box?</p> <p>How is what we are doing like what a scientist would do?</p>	<p>Name tag stickers labeled with numbers, five mystery boxes A-E containing: a partially peeled orange, a rubber glove, a geode (to combine both a rough and smooth version of rock), a bundle of yarn, a metal measuring cup, work packets</p>	<p>Students will be assessed on their ability to work cooperatively with their group members, their drawings done at each station, and their ability to follow directions.</p>	<p>About 20 minutes</p>
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<p>Explanation: Have the students return to the floor, but sitting in their groups. Ask #1 student from each group to say what the group thought was inside A box and a word they thought of to describe it. Record each group's guess and word on the dry erase board. Next ask #2 student to repeat the process for Box B, and continue on until all of the boxes have been discussed and students had at least one turn. Review all the guesses and words with the students, and then reveal the mystery items! Important words are: rough, smooth, heavy, light, hard, soft, flexible, rigid, large, small, cold, etc. If students do not generate some of these, provide them. Tell students that touching is one way we can learn about what is around us. Many times we use our hands to feel things, but all skin can feel touch; our hands are just especially sensitive. Reveal the peeled orange last. Introduce how our sense of smell can help us figure things out when we cannot tell from sight or touch, and tomorrow we will be investigating more about identifying things through smell.</p>	<p>Did we think of some of the same words to describe the mystery objects? Some different words?</p> <p>Was it hard to know what was in the box without seeing it?</p> <p>Did you guess what was in the box?</p> <p>If they did not guess the orange: What other sense could you have used to guess this was an orange? If they did guess the orange: Did you use any senses other than touch to know this was an orange?</p>	<p>Five mystery boxes A-E containing: a partially peeled orange, a rubber glove, a geode, a bundle of yarn, a metal measuring cup; work packets, and dry-erase board & markers.</p>	<p>Students will be assessed on their active participation when discussing the mystery boxes as well as behaving respectfully while other students are presenting their guesses and words.</p>	<p>About 10 -15 minutes</p>
<p>Extension: Provide each student with a bag filled with a smooth rock, a rough rock, a piece of sandpaper, a piece of poster paper, a piece of corrugated cardboard, a cotton ball, a piece of thick yarn, a piece of felt, and a metal spoon. Have the students place these items on individual working trays and independently divide the items into categories of their choosing. Once they have divided them, ask each student to say why they chose to put the</p>	<p>Why did you choose to put (items) together?</p> <p>Could (item) go with any other objects other than the ones you used?</p> <p>What if I told you to show me something soft? Small? Heavy?</p>	<p>Bags filled with: a smooth rock, a rough rock, sandpaper, poster paper, corrugated cardboard, a cotton ball, thick yarn,</p>	<p>Students will be assessed on their responsible use of materials and their explanations given for their grouping choices.</p>	<p>About 10 to 15 minutes.</p>

items together by using descriptive words like <i>rough, smooth, hard, soft, squishy, bumpy, cold, etc.</i>		felt, and a metal spoon; trays.		
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Notes:

This lesson is to be part of a unit on the five senses and should follow lessons on hearing and sight. This lesson is meant to make students think about how they can use their sense of touch to experience the world around them. Although they are using their hands, it is important that students know that all of their skin can be used to touch and feel. The use of a partially peeled orange in this lesson is to encourage students to use their sense of smell to help them to identify the mystery item and to segue into the next day's lesson on smell.

Safety Notes:

Some of the objects, such as the geode, sandpaper, or the metal spoon, could be dangerous if students are not behaving responsibly with them. The teacher must be sure that students use these items properly.

Differentiation Strategies:

Students should be placed in pairs of stronger and weaker students. Consideration should also be given to which students may not work together responsibly. Students will **not** be forced to put their hand inside the box if they are frightened. They may feel the objects during choice time after they have been revealed. These students should try to help draw the object described by teammates and also present guesses and a word like everyone else.

Resources:

Neuroscience for Kids (2008). Sight (Vision). Retrieved November 22, 2008 from <http://faculty.washington.edu/chudler/chtouch.html>.

Extension adapted from: **SCIENCE STANDARDS OF LEARNING *ENHANCED SCOPE & SEQUENCE*: KINDERGARTEN THE FIVE SENSES: TOUCH**

Rubric: Day 6: Can you “see” with your hands?
 Assessing kindergarten student performance during mystery box activity.



Day 5: Why do we have two eyes?

Enter rubric description

	Poor 1 pts	Good 2 pts	Excellent 3 pts
Works well with Partner Student cooperates with group and works together to complete activity.	Poor Student did not cooperate with his/her group, would not share materials, or take turns during activity.	Good Student mostly cooperated with his/her group but needed to be reminded or redirected to do so.	Excellent Student cooperated with his/her group and worked together to complete the activity.
Directions and Responsibility Student follows directions when given and behaves responsibly with materials.	Poor Student did not follow directions and misused the materials provided for the activity.	Good Student did not follow all directions or did not always use materials properly for the activity.	Excellent Student followed directions and behaved responsibly with materials for the activity.
Completion of Activity Marker dropping activity is complete and results are able to be described.	Poor Student did not complete the majority of the activity and did not attempt to look at results.	Good Student completed most or all of the activity, but did not try to examine the results.	Excellent Students completed the activity and worked with his/her group to describe results.
Whole Group Participation Student contributes to the classroom discussion by being attentive, taking turns, and sharing ideas.	Poor Student was not attentive and behaved in a way that was both distracting to him/herself and others in the classroom.	Good Student was attentive some of the time, had difficulty taking turns and/or shared a few ideas.	Excellent Student was attentive, took turns, and was willing to share ideas.
Content Knowledge Student demonstrates understanding of content through discussion and participation in activities.	Poor Student demonstrates little understanding of the content knowledge.	Good Student demonstrates some understanding of content knowledge but still needs guidance.	Excellent Student demonstrates a strong understanding of content knowledge.

Box A

Box B

Box C

Box D

Box E

Lesson Plan Template

Topic: Smell As One of the Five Senses

NSES: Physical Science Standard- Properties of Materials and Objects, Science as Inquiry Standard- Abilities Necessary To Do Scientific Inquiry

SOL: K.2 Students will investigate and understand that humans have senses that allow one to seek, find, take in, and react and respond to information in order to learn about one's surroundings. Key concepts include: five senses and corresponding sensing organs (taste-tongue, touch-skin, smell-nose, hearing-ears, and sight-eyes).

Subject: Science

Daily Question: What would life be like if you could not smell?

Date: Day 7 of Unit

Grade Level: Kindergarten

Procedures for Learning Experience	Guiding Questions	Materials Needed	Evaluation (Assessment)	Approximate Time Needed
Engagement: Teacher and teacher aide will each move around the room and allow the students to smell the cinnamon container and then to smell the curry container.	Do you think you would want to eat the food in container #1? How come? Do you think you would want to eat the food in container #2? How come?	2 Covered containers of cinnamon and 2 covered containers of curry	Teacher will monitor student participation and ability to follow directions.	5-10 minutes
Exploration: Students will rotate around the room between extract stations. There will be one film canister per child at each extract stations. Students will draw a picture to represent the smell at each station. Teacher and Aide will ask the students questions as they move from station to station. Students will remain at each station for 5 minutes. Students will smell the extract and then draw a picture of what they think the smell could be. Students will also draw either a happy or	What does each extract smell like? Are any of these smells familiar? Which smells do you like? Which smells do you not like? Can you guess what any of these smells are?	Garlic extract, vanilla extract, peppermint extract, almond extract, orange extract, different color sticker for each extract, 20 black film canisters with a hole in each, assortment of markers at each station, student	Teacher and Aide will monitor and evaluate student participation, ability to work in a group, and ability to follow safety	25 minutes

<p>sad face if they like the smells.</p>		<p>packet of paper with a different colored sticker for each page.</p>	<p>instructions.</p>	
<p>Explanation: Students will sit on the rug and the teacher will ask the students to reveal their guesses for each extract. After student responses, teacher will tell the students what extract each film canister contained.</p>	<p>What did you smell in the container with the ____ sticker? Were any of your guesses about the smells correct? Which smells did you like/not like? Why? What part of your body did you use to figure out how each container smelled? Besides food, what else do you use your nose to smell? If you could not smell things, how would your life be different?</p>	<p>One of each film canister</p>	<p>Teacher will monitor student participation & quantity/quality of guesses made by students.</p>	<p>10-15 minutes</p>
<p>Extension: Students will remain on the rug. Have students shut their eyes and tell them to pinch their noses with their fingers. The teacher will then place the surprise food in the student's hands. Make sure the students do not look at or smell the candy before they put it in their mouth. After the students eat the candy inform them that the look and smell of food contributes to how good or bad a food tastes. Ask the discussion questions.</p>	<p>Who was nervous to put the surprise food in their mouth? Would you have felt more comfortable if you could have smelled the sweet scent of the peppermint first? Would you have felt more comfortable if you could have seen the peppermint first? Did it taste different when you unpinched your nose?</p>	<p>½ of a peppermint puff candy per child, already cut in half prior to teaching the lesson</p>	<p>Students will be evaluated based on participation and ability to follow the teacher's instructions.</p>	<p>5-10 minutes</p>

Notes: About a week prior to the lesson, the teacher should send a permission slip home to parents. The note should inform them of the extracts the students will smell and the peppermint puff candy the students will be eat. Students should not participate if they do not return a permission slip to school or the parents do not want their child participating in the lesson on smell. The teacher should remind the students they must be sitting safely on the rug before they will be given their surprise food.

Source: Adapted from Bosak, S. (2000). *The Nose Knows*. Science Is... Ontario: TCP Press.

Lesson Plan Template

Topic: Taste As One of the Five Senses

NSES: Physical Science Standard- Properties of Materials and Objects, Science as Inquiry Standard- Abilities Necessary To Do Scientific Inquiry

SOL: K.2 Students will investigate and understand that humans have senses that allow one to seek, find, take in, and react and respond to information in order to learn about one's surroundings. Key concepts include: five senses and corresponding sensing organs (taste-tongue, touch-skin, smell-nose, hearing-ears, and sight

Daily Question: What would life be like if you could not taste?

Date: Day 8 of Unit

Grade Level: Kindergarten

Subject: Science

Procedures for Learning Experience	Guiding Questions	Materials Needed	Evaluation (Assessment)	Approximate Time Needed
<p>Engagement: Students will be given a paper towel to dry their tongues. Students will each have a small amount of sugar to put on their tongues. The sugar should not taste sweet until the sugar mixes with the student's saliva.</p>	<p>Did you taste the sugar when your tongue was dry? What happened when your mouth got wet? Could you taste it better then?</p>	<p>One paper towel per student, sugar</p>	<p>Students will be assessed based on participation.</p>	<p>5-10 minutes</p>
<p>Exploration: The children will each have a piece of the following foods: candy corn, bitter chocolate, sour patch kids and pretzel. All of these food items will be included in a plastic bag and each student will have one bag. The children will try the same foods at the same time. The teacher will instruct the students on when to eat each of the foods. The students will talk to the other children at their table about how the food tastes. The children will be encouraged to use details when telling their tablemates about the foods. Students will all eat the same foods at the same time then describe the taste.</p>	<p>How did the candy corn taste? How did the chocolate taste? How did the sour patch kid taste? How did the pretzels taste? Which foods did you enjoy eating the most/least? What part of your body lets you know how each food tastes?</p>	<p>Enough candy corn, bitter chocolate, sour patch kids, and pretzels for the class</p>	<p>Students will be assessed based on participation and ability to work together in a group.</p>	<p>10-15 minutes</p>

<p>Explanation: The teacher will explain that the tongue allows people to determine four basic tastes: sweet, salty, sour and bitter. The teacher will talk to students about other foods that are sweet, salty, sour, and bitter then ask the students to name some foods that fit into each category. Tell the children that the tongue only works when it's wet with saliva, that's why they couldn't taste the sugar when their tongue was dry earlier.</p>	<p>Do you like sweet, sour, salty, or bitter foods better? Do some foods have more than one taste? What other foods taste sour, bitter, salty, and sweet? What if our tongue could only determine one type of taste?</p>	<p>No materials are needed.</p>	<p>Students will be assessed based on their participation and ability to discuss the four types of tastes. Each student should have a chance to speak during this stage.</p>	<p>10-15 minutes</p>
<p>Extension: Independently, students will be given four more foods to taste. Teacher should instruct student to eat the peppermint before the coffee. They should match the taste of the food up with one of the four basic tastes: sour, sweet, salty, and bitter. Teacher must emphasize the defining characteristics of each word in order for students to match correctly. For example, emphasize that salty ends in the y that sounds like an e.</p>	<p>Which food tastes sour? Which food tastes most like the sour patch kids we ate earlier? Which food tastes salty? Which food tastes most like the pretzel we ate earlier? Which food tastes sweet? Which food tastes most like the candy corn we ate earlier? Which food tastes bitter? Which food tastes most like the chocolate we ate earlier?</p>	<p>Student worksheet to match food with taste. Lemon-Sour, Salted Popcorn-Salty, Peppermint Christmas candy-Sweet, Dry coffee- bitter</p>	<p>Students will be assessed on their ability to correctly match the food up with the taste (sour, bitter, salty, or sweet).</p>	<p>10 minutes</p>

Notes: Teacher should definitely make sure to send permission slips home prior to teaching this lesson. The teacher should list all of the foods that the students will taste to make sure the child does not have food allergies. In addition, the note should ask parents not to tell the children the foods they will be trying in order to provide a more enriching lesson to the students. Students should be reminded to slowly chew any of the food they put in their mouths. Teacher and teacher aide should closely monitor student behavior during this lesson.

Source: Adapted from Bosak, S. (2000). *Stick Out Your Tongue*. Science Is... Ontario: TCP Press.

Stories of Use

I imagine teaching this five senses unit in my kindergarten practicum classroom would likely be very enjoyable for the students and a quite effective lesson. The 18 students in my kindergarten classroom would be engaged in this hands-on lesson. I firmly believe they would connect the lessons to their personal experiences and everyday life after the completion of our eight day unit. These kindergarteners are of varying academic abilities. However, these lesson plans are designed to be appropriate for a range of students. Our highest learners may get more from the lesson but even the lowest students in our class would have a much better understanding of their five senses as a result of this unit.

On Day 1 we started the unit with an introductory lesson on each of the five senses and corresponding sense organs. We began the lesson with a read aloud of *Your Senses*. This text goes through each of the five senses and which parts of the body are used for each of the five senses. We encouraged the students to ask questions after the read aloud. One gifted student in our class who is quite curious asked the following question, “If we all taste using our tongue how come some people love foods that other people do not like at all?” Another student came up with the following question, “Does everyone have all five senses?” We welcomed these intriguing questions because it showed the engagement and motivation of the students to learn about the five senses. It was our intention to bring out the natural curiosity of our students during this introductory lesson.

The organization of the kindergarten classroom changes with each day's lesson. On Day 1, using whole group instruction the students participate in a read aloud and discussion about the five senses. On Day 2, when the students investigate and categorize different sounds they work in small flexible groups. Ability grouping is not used; however, groups are formulated based on student behavior and ability to focus. The activities on Day 3, when the students sort bottles containing liquids according to pitch, are also completed in small groups based on behavior and ability to focus. For Day 4, the whole class is involved in the same activity of hunting around the classroom for objects based on size, color, and shape. On Day 5, students will work with a partner to discover the importance of having two eyes as well as experience what life is like without the sense of sight. The lesson on Day 6 gives students the chance to work independently by investigating objects hidden within boxes using only their sense of touch. On Day 7, the classroom is once again organized into small groups based on student behavior and ability to focus. The students will explore several smelling stations throughout the classroom in small groups. The lesson on Day 8 uses a variety of classroom instructional strategies. The students will independently taste each of the foods during the extension; however, during the exploration the students will discuss the tastes of the food with the children at their table. Some of this last day's lessons are independent while others are collaborative.

The progression of the module lessons were intended to show connects between the five senses and corresponding senses organs. We began with an introductory day to expose the students to the five senses. Our next lesson was specifically about the sense of hearing. We then thought the logical next choice was the

sense of sight. We would explain to the students that hearing becomes very important for individuals who are not able to see. By placing the hearing lesson before the sight lesson the connection between these two senses can be more easily perceived by the students and taught by the teacher. Our next lesson focused on the sense of touch. We believe there is an observable connection between seeing with your eyes and “seeing” with your hands. After teaching the students about sight on Day 5 we believed it made sense to then teach the students about their sense of touch. By participating in the mystery box activity where the children can only feel the objects, we feel the kindergartners will understand how touch is also important for people who do not have the sense of sight. These connections would be addressed by the classroom teacher and explicitly discussed with the students. The lesson taught on Day 7 is about smell which we believe is connected to the sense of sight because food may smell wonderful but the sight of the food may change the students mind about the food. On the other hand, a food may look delicious but smell awful which would deter a child from eating it. Once again, these connections would be addressed by the classroom teacher. Finally, on Day 8 the students will participate in a lesson on taste. Our extension lesson for Day 7 even involves taste. The students will pinch their noses while having a peppermint candy in their mouths, and then they will unpinch their noses and observe the difference in the taste of the candy. These connections between taste and smell will be quite explicit; however, once again we will point these out to the students.

The guided questions introduced at the beginning of each lesson really helped to guide our classroom explorations and study. The question on Day 1 was “What are your five senses?” From this

question the students knew the focus of the lesson and what they were expected to learn. In addition, this guiding question helps to focus the teacher and remind her exactly what she needs to help the students understand. The question on Day 2 really intrigues the students and makes them wonder “Are all sounds the same?” Our lesson on Day 3 also helps to guide the exploration by asking “Can you hear the difference in pitch?” On Day 4 and 5 the students are asked “What do your eyes do?” and “Do you need both eyes to see?” These guiding questions are focused and really do a wonderful job of reminding both students and teachers alike what the main focus of the lesson should be. Our lesson on Day 6 encourages students to wonder “Can you see with your eyes?” The questions on Day 7 and 8 “What would life be like if you could not smell?” and “What would life be like if you could not taste?” are designed to motivate students to want to find out the answer to the questions by actively participating in the lessons. Overall, we really do feel that each day’s guiding questions helped to focus the lesson.

Regarding assessment, some assessments were certainly more effective than others. For example, on Day 1 the summative assessment which required students to draw pictures of things they think they hear, see, feel, smell, and taste next to a picture of the body part was great! This activity was designed to be a pre-assessment and we would definitely include this assessment in our next year’s unit on the five senses. It was a success and a great indicator of what students knew prior to the unit. On Day 3 numerous of the students had difficulty putting the bottles in order of the pitch. There was confusion about how to correctly order the bottles from lowest to highest pitch. Unfortunately, many students became frustrated with this lesson. The

formative assessment for this lesson was appropriate because it was based on student participation.

However, the summative assessment was just too difficult for the majority of the kindergarteners and was therefore unsuccessful. It is very unlikely that we would use this same assessment in next year's unit on the five senses.

As a result of exposing the students to these lessons about the five senses, they became very curious about the uses of other parts of their body. For example, numerous of the students asked questions about why they toes, knees, and hair. The students explored the five senses and their corresponding sense organs and then began to wonder what purposes their other body parts served. In response to these questions presented by several students, we taught a lesson on the purpose of many of the body parts, including the toes, knees, elbows, hair, and fingernails.

As much as we believe the lessons in our unit on the five senses are effective and engaging, we have no doubt there are numerous other creative ideas and suggestions for additional activities. An exploration or extension activity for a lesson on touch could be done by creating a large picture of the school mascot on poster board and have the children add textured materials to the mascot. The students could add bubble wrap, foil, feathers, leaves, pipe cleaners, cotton balls, and sandpaper and describe the texture of each material as smooth, rough, or other descriptive words. Another positive aspect of this activity is the interdisciplinary approach taken by incorporating science with the arts. An additional activity to use while teaching this unit on the five senses addresses both hearing and sight. In this activity the teacher would show

pictures of animals and have the children listen to corresponding animal noises. This lesson could show students that they can use their sense of sight to figure out the name of the animal but they could also use their sense of hearing to determine the name of the animal. This lesson teaches students about their senses while also exposing them to the sounds that animals make.

Next year when we use this unit on the five senses again we would make a few changes. For example, we would change the summative assessment on Day 3 to make it less confusing and frustrating for students. In addition, we would also change the exploration activity on Day 7. Instead of using only extracts, we would use a wider range of materials in order to have a broader range of scents. For instance, we would use soap, grass, and pickles instead of only using extracts. These additional materials will add to the effectiveness and engagement in the lesson by representing a wider range of scents. Overall, our lessons were a huge success and we would not eliminate or greatly change any of our lesson plans. However, we would alter a few of the sections in some of the lessons next year.

After completion of our unit on the five senses which ended with a day about taste, the students were so curious about why the bitter chocolate tasted quite terrible. They asked us, “Why do they even make chocolate that tastes so bad?” The students were quite surprised to find out that bitter chocolate is in many of the baked goods they love eating! They also wondered why their parents drank coffee in the morning when it did not taste good at all! The kindergartners asked us, “If coffee tastes bad why do my parents drink it all the time?” We explained to the students that the coffee tastes different when it is brewed with water.

We attempted to connect these questions the students had to other areas of study in our kindergarten classroom. For example, an idea we had was to show students that sometimes unexpected occurrences happen. They did not expect the coffee or chocolate to taste bad because they love chocolate and their parents love coffee! This lesson corresponds nicely with Virginia SOL K.1 which states that “The student will conduct investigations in which unusual or unexpected results in an activity are recognized.” As a result of the questions raised by the students, we could teach a lesson about attraction and nonattraction of magnets and objects. The students would be surprised to find out that not all shiny materials are attracted to magnets. This lesson would address the previously mentioned Virginia SOL and also part of Virginia SOL K.3 “The student will investigate and understand that magnets have an effect on some materials, make some things move without touching them, and have useful applications. Key concepts include attraction/nonattraction, push/pull, attract/repel, and metal/nonmetal.” We believe this connection from our unit on the five senses to magnetic attraction and nonattraction would be effective in the kindergarten classroom.

Overall, this unit on the five senses and their corresponding sense organs engaged our kindergarteners, encouraged them to ask insightful questions, and connected nicely with a unit on magnets. We would make the previously discussed revisions before teaching this unit again next year; however, it was a wonderful addition to our classroom curriculum and was thoroughly enjoyed by our kindergarten students.

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