



Lesson Summary: The brain integrates sensory information in ways that we do not always recognize consciously. This activity utilizes multimedia devices to illustrate how the brain takes in sensory information. Students will learn about how the brain can change information provided by the senses.

Grade Level 9-12

Lesson Length
1 class period

Standards Alignment

Next Generation Science Standards

- 4-LS1-2. Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.
- **Framework for K-12 Science Education:** Science & Engineering Practices 4,8

Objectives—Students will be able to

- Discuss how the brain interprets information.
- Discuss how the brain selects important information.

Assessment Options

- Informally assess group cooperation and students' ability to work together.
- Direct students to reflect on this activity in their science notebooks.

Procedures

Engage

1. Ask students to list the senses (touch, taste, smell, vision, hearing, balance, proprioception).
2. Create a list of all of the pieces of information each of those senses is relaying to their brain at the present moment (for example: touching the chair they are sitting in, sights around the room, the smell of the room, background noises, how hungry they are, etc).
3. Next, do the brain station activities **Blind Spot**, **Heads or Tails**, and **Do the Stroop** located here: <http://brainu.org/experiential-stations>
4. Explain that the **Blind Spot** and **Heads or Tails** stations illustrate how the brain collects information and how the brain compensates for missing information.

Heads or Tails: This exercise focuses on our brain's sensitivity to change. This article briefly describes that phenomenon: <http://www.hhmi.org/senses/a120.html>

Blind Spot: This exercise focuses on our brain's ability to interpret data. This article briefly describes this phenomenon: <http://www.hhmi.org/senses/a110.html>



5. Explain how the **Do the Stroop** station illustrates how the brain selects, manages, and analyzes incoming information

Do the Stroop: This exercise focuses on our brain's ability to focus on a task with multiple pieces of information present. Web pages that briefly describe this phenomenon include: http://en.wikipedia.org/wiki/Stroop_effect, <http://faculty.washington.edu/chudler/words.html>, and <http://www.pbs.org/wgbh/nova/everest/exposure/stroopintro.html>. The pbs site has an online Stroop test.

Explore

1. After instructing the students to be quiet throughout the entire video, present the following YouTube video <http://www.youtube.com/watch?v=Ahg6qcgoay4>
If you are unable to access YouTube, but have QuickTime, you can utilize this website as an alternative: <http://www2.psych.ubc.ca/~rensink/flicker/download/index.html>
2. Once the video is over, ask the students if they saw the object first time through.
3. Lead a discussion as to why it was possible to miss the object despite having visual information in plain view. For an explanation, see <https://www.ismp.org/resources/inattentive-blindness-what-captures-your-attention>

Optional extra video highlighting this phenomenon (YouTube needed):
<http://www.youtube.com/watch?v=ubNF9QNEQLA>

Engage

1. Ask the students to relate the phenomenon in the videos to the phenomenon in the blind spot activity. How are they similar? How are they different?
2. Why does the brain sometimes not register sensory information?
3. What are the benefits of this? What are the disadvantages?
4. What are the implications of this selective sensory processing for how one remembers events? For eye witnesses?