Sensory Stations

Goals: Students will explore how sensory receptors detect stimuli and send signals to the brain and compare this process to how AI systems like LLMs process data and produce responses.

Background Information: This activity explores how human sensory receptors detect various stimuli (like light, sound, touch) and send electrical signals through neurons to the brain or spinal cord. These signals result in immediate behaviors, like reflexes, or the formation of memories. Through hands-on activities, students will explore reaction time, vision sensitivity, and how they process touch. Students will also be introduced to the basics of Artificial Intelligence (AI). Students will learn that AI systems "sense" input data (text, images, sounds) and process it through algorithms that are surprisingly like our own neural networks. Students will compare and contrast AI inputs to sensory data that our nervous system processes.

Station Title	Overview	Materials needed
Reaction Time Lab	• Students will discuss the anatomy of nerves to understand how our bodies respond to different stimuli. • Students will also explore reaction time by dropping a meter stick and measuring how long it takes them to catch it.	• Meterstick, Timer, data sheet • Station Instructions • Student Handout

Color and Light	• Discuss and learn about the anatomy of the eye and how we see
	• Students will explore how color works and how we perceive color
	• Students will label the anatomy of the Eye and sensation areas of the brain for sight.
	• Links for Eye Anatomy Activities
	  ○ Video https://tn.pbslearningmedia.org/resource/tdc02.sci.life.reg.vision/more-than-an-image/
	  ○ Label the Eye https://www.sciencelear
		• Colorful objects(paint chips, plastic toys of a single color). It is suggested you go to the dollar store, or some place similar to get cheap objects, or use things like foam manipulatives you may have in your classroom.
		• colored filters (colored cellophane/plastic

	n.org.nz/labelling_interactives/12-labelling-the-eye ○ AMNH Sight activity/video https://www.amnh.org/explore/ology/brain/seeing-color ○ Colorblind test: https://www.colorblindnesstest.org/	
Sound	• Discuss and learn about the anatomy of the ear and how we hear • Students will explore the auditory system specifically how it detects sound and stimulus and relays these signals back to the brain.	• Tuning forks or use this video https://www.youtube.com/watch?v=f99MnB7vfIQ • Mallet • Cup (plastic ok) of water • Model or drawing of Ear • Computers for video
Touch Sensitivity	• Discuss and learn how we feel and the anatomy of the nervous system	• Opened paper clips (with ends 1-2 cm apart • Blindfold (optional) • Feather, • Cotton ball • Sandpaper • Smooth metal • Tissue paper • (or any variety of objects with varying textures)
Different species, Different Senses	• Students will explore three different species: Humans, Aplysia (sea hares) and Pit vipers. They will compare their senses and how they process information.	• Cards for different species • Chart paper for venn diagrams
How Machines Sense and Learn	• Students should be able to explain how AI systems will receive input data and how it processes that information into outputs.	Inspired by this lesson plan https://aipedagogy.org/assignment/exploring-neural-networks-through

	• This information should show students how AI algorithms are inspired by neural networks.	-googles-quick-draw/ • Classifying cards Set 1 and 2 • Computers and access to internet for Google Quick Draw (if students can't use quick draw on their device, the teacher can display the images on a screen for the whole class to see and do this as a whole group.