

VEX 123 AI Literacy Activity

“Artificial Intelligence is a branch of computer science concerned with techniques that allow computers to do things that, when people do them, are considered evidence of intelligence.”

-David S. Touretzky, Ph.D, [VEX Robotics Educators Conference 2023](#)

Why teach young learners about AI?

Artificial Intelligence (AI) is a growing part of our world, and all students deserve a basic understanding of how it works. Introducing AI concepts early helps lay a strong foundation, preparing students to think critically about the role AI plays in everyday life. [While AI learning looks different for young students than for older ones](#), it can still build key skills like problem-solving, pattern recognition, and algorithmic thinking. AI literacy with young learners does not mean students are expected to code machine learning algorithms. Instead, it involves introducing foundational ideas about AI, like perception.

Learning about AI and computer science with robots also encourages collaboration, reflection, and creative thinking. Using robots like VEX 123 makes abstract AI ideas concrete and hands-on. Students can see an input and connect it to the output of a sensor. This approach helps students understand not just what AI is, but how it works and how to use it responsibly.

VEX 123 AI Literacy Activities

This set of Activities focuses on a core concept in AI: **perception**—how machines interpret data from their environment. While humans use senses like sight and hearing, robots use sensors, like the Eye Sensor. In these Activities, students explore how the Eye Sensor on VEX 123 detects colors and reports information. By using sensor data, students learn how robots can make decisions based on what sensors *perceive*.

As a teacher, understanding the Eye Sensor, what it detects, and what it reports, will help you support your students as they work through these Activities. [Read this article to learn more about the Eye Sensor](#). If you have questions about how to teach with these activities, post your questions, or share your ideas and stories of your students in the [PD+ Community](#)!

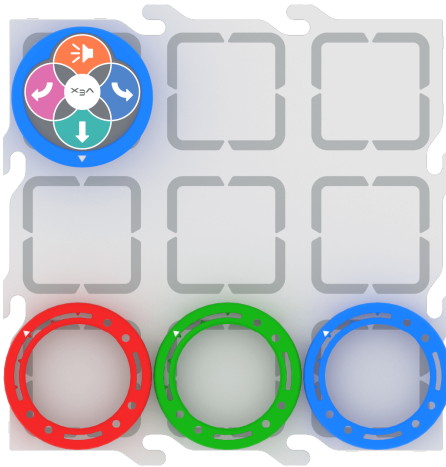
These Activities help demystify AI and make learning fun, interactive, and meaningful. **They are designed to be taught in the following sequence:**

- [What is AI?](#) - Students are given common technology items and decide if they think they are AI or not, and discuss why to help students develop a definition of what AI is. (Tailor the items listed to best suit your students.)
- [Hue Value Hunt](#) - Students test different colored classroom objects with the Eye Sensor, and collect data about the color they perceive and the hue value reported by the sensor in VEXcode 123.
- [Lighting Technician](#) - Students experiment with changing the lighting conditions around the sensor and test the same objects as the previous activity, to see how ambient light affects the sensor data.
- [Bug Hunter](#) - Students are given a project with a bug to run, observe, and apply what they learned about the sensor to fix the project and make it run as intended.
- [Code a Course](#) - Students set up a course with red, green, and blue landmarks and code the robot to move through it using Eye Sensor data to make decisions.
- [Alien Planet Mapper](#) - Students create a map of an alien planet, using colored objects. They code the robot to detect and identify the location of clean water.
- [Mystery Planet Mapper](#) - Now that students have identified the location of clean water on their planet, they are given a mystery planet only the robot can perceive, where they must identify clean water.

Resources to support teaching the Activities

- Students will be using VEXcode 123 in these Activities. [Ensure students have access to VEXcode 123](#).
- Looking for more to do with the Eye Sensor and VEX 123? Try the [Mars Rover - Landing Challenge STEM Lab Unit](#) or the [Mars Rock Adventure Activity Series](#).

VEX 123 AI Literacy Activity



Alien Planet Mapper

Use sensor perception to solve a problem!

With your group, code the 123 Robot to find water on a distant planet.

Step by Step

1. Set up your 123 Robot and Field as shown above. The goal is to code the robot to find the clean water (a blue Art Ring) on an alien planet, and identify it using a sound.
2. Create a new project in VEXcode 123. Code your robot to find and identify the blue water.
 - Use the Eye Sensor to find the blue water.
 - Use a **Play sound** block to show that the robot found the blue water.
3. Run your project to test it. Keep working on your project until your robot can find and identify the blue water.
4. Change the order of the Art Rings on the Field and see if your 123 Robot can find the water!

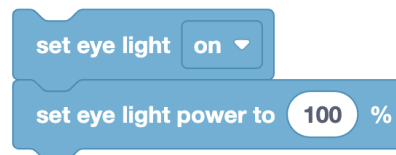
play sound honk ▼

'LEVEL UP'

- **Find the food!** – Let the green Art Ring represent food, and add to your project so the robot also identifies it! Use a different sound to indicate food.
- **Create a new element** – Decide what you would like the red Art Ring to be. Add to your project so the robot identifies your new element. Be sure to use a different sound!

Pro Tips

- Use the **Set eye light** and **Set eye light power** blocks together as shown below to help the Eye Sensor detect colors as accurately as possible.



Standard: CSTA 1A-AP-10: Develop programs with sequences and simple loops, to express ideas or address a problem.