VEX GO 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 GO 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 GO 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 in VEX GO 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 GO.
- **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 build the Super Code Base 2.0. They 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 Disks and code the robot to move through it using Eye Sensor data to make decisions.
- **Alien Planet Mapper** - Students map the features of an Alien Planet and code the robot to detect and identify the location of clean water represented by colored objects.
- **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 GO in these Activities. Ensure students have access to VEXcode GO.
- For help configuring the Super Code Base 2.0, see this article.

VEX GO AI Literacy Activity

What is AI?

Play a round of AI or Not?

With your group, decide which items are AI, then create your own definition of AI.

Step by Step

1. Read the list below together with your group, to make sure everyone knows what these items are:
    a. Virtual assistant (like Siri or Alexa)
    b. Music streaming service (like Spotify or Apple Music)
    c. Refrigerator, like the one in the picture to the right.
    d. Game console (like Nintendo, Playstation, or Xbox)
    e. GO Robot
2. Read the first list item out loud to the group. Raise a hand if you think the item is AI.
3. Does everyone in your group agree? Have each person in your group explain why they think the item is or is not AI, and decide together if it is AI or not. Repeat this for each item in the list.
4. Together with your group, come up with your own definition of what AI is, and write it below:

AI is _____

_____

_____

‘LEVEL UP’

- **Compare your definitions -** Talk to another group about their definition. Is it similar or different to yours? Why?
- **Sort more -** Think of more technology items in your home or school, and decide if they are AI or not with your group.

Pro Tips

- AI stands for Artificial Intelligence. What does *artificial* mean? What does *intelligence* mean? Talk with your group about each word individually, and both words together, to help you create your AI definition.

Standard: CSTA 1A-IC-16: Compare how people live and work before and after the implementation or adoption of new computing technology.