

Three Ways to Code

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Workshop Goals

- Experience the flexibility and accessibility of coding with VEX 123
- Code a 123 Robot to complete challenges inspired by a wagon trail journey
- Practice coding with Touch, Coder cards, and VEXcode 123



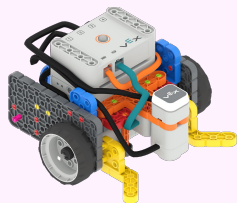
The VEX Continuum



VEX 123

Coding Starts Early

Ages 4+



VEX GO

STEM Starts Early

Ages 8+



VEX AIM

Real World Coding

Ages 8+



VEX IQ

Applied STEM Learning

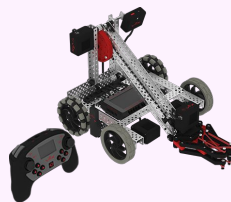
Ages 11+



VEX EXP

Real World STEM for Classrooms

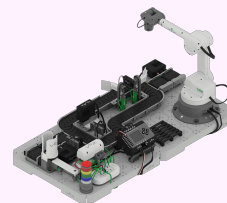
Ages 14+



VEX VS

Real World STEM for Competition

Ages 14+



VEX CTE

Workforce Readiness

Ages 14+



VEX AIR

STEM Skills Take Flight

Ages 14+

VEX CODE VR

Virtual Robot Coding

Ages 8+



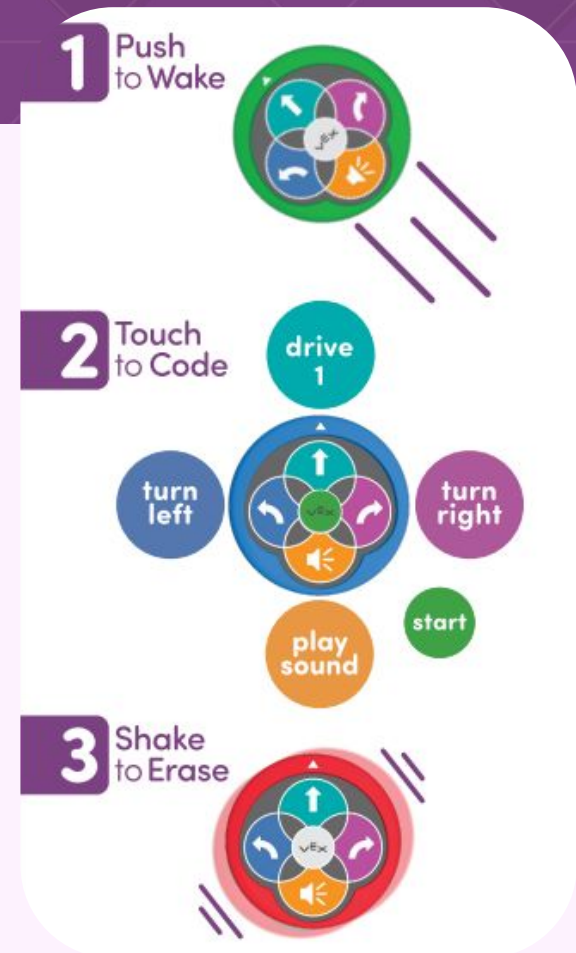
Overview of VEX 123

- Takes Computer Science off the screen and brings it to life
- Code in 3 Ways:
 - Touch buttons
 - Coder and Coder cards
 - VEXcode 123
- STEM Labs and Activities enable you bring CS into curricular areas you're already teaching



Coding with Touch

- Push to wake the 123 Robot
- Touch the button until you see the light change color
- Press the **Start** button (center) to run the project
- Shake the robot to erase the project



**Turn your robot into a
covered wagon with
the Art Ring!**



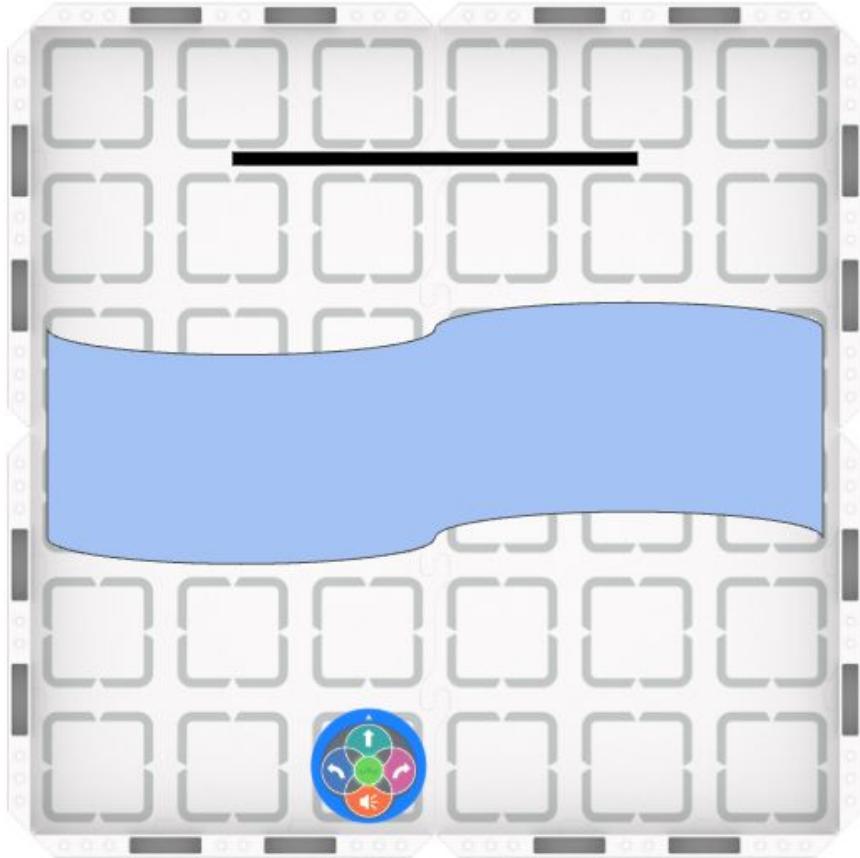
Coding with the Coder and Coder cards

- Turn on the Coder
- Coder cards run in order from top to bottom
- Press the **Start** ► button on the Coder to run the project
- Rearrange Coder cards to change the project



***Pro Tip:** Give students only the Coder cards that they need for the project. Give extra Coder cards for differentiation.*

Uh oh! We've got to cross a river...



**Code our 123 Robots
to safely cross the
river and stop at the
riverbank on the
other side.**

Adding Sensors to your project

- **Code our wagons to detect obstacles**
 - **Eye Sensor** can detect an object and the colors red, green, and blue
 - **If** there is an object → go around it



drive until object



if object



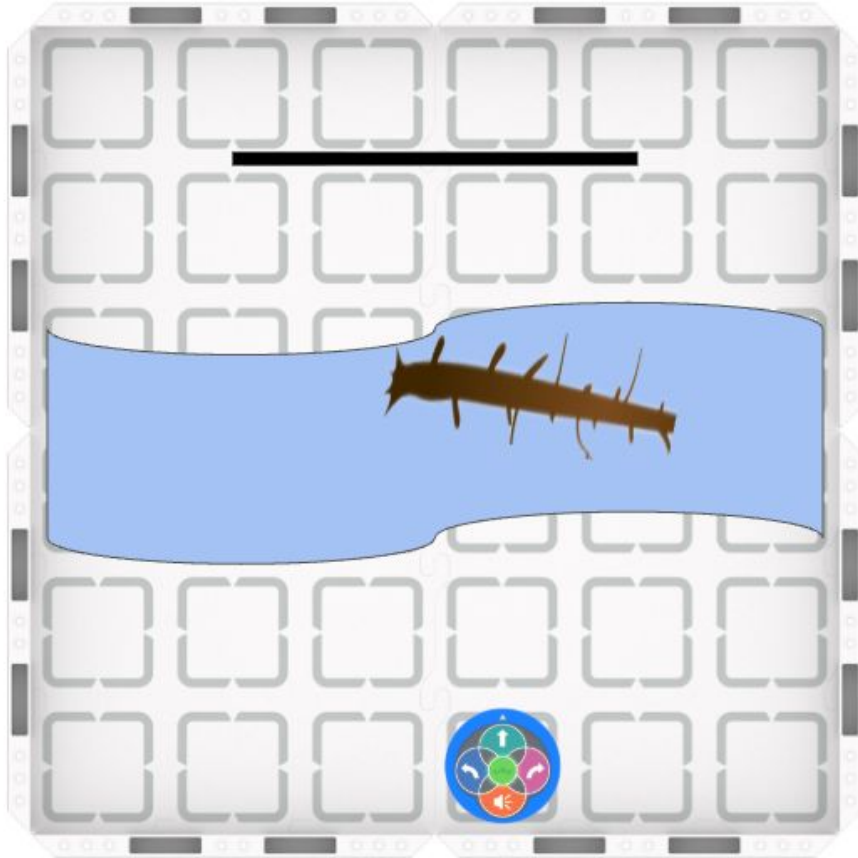
if no object



Adding Sensors to your project

- **Line Detector** (on the bottom of the robot) can detect a dark line below the robot
 - **drive until line** → cross the river to the opposite bank
- Use the **Go to start** Coder card to create a loop and make an algorithm

Oh no! There's a log floating down the river!



**Code our 123 Robots
to safely cross the
river and stop at the
riverbank on the
other side.**

Check in

- We can all be doing the same activity, but in the way that works best for each of us
- Features built into the robot, and resources we've created support flexibility and accessibility.
 - Visual and auditory feedback
 - Icons on Coder cards for pre-readers
 - Printable resources, etc.



Special Education Teachers Evaluating the Accessibility of CS Educational Robotics

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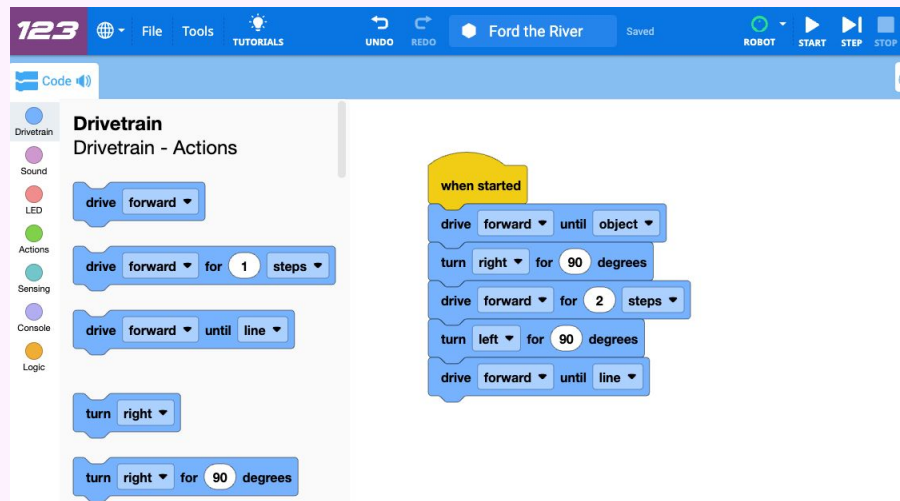
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Coding with VEXcode 123

- Connect the 123 Robot to VEXcode
- Drag blocks and connect them to **When started** block
- Blocks run top to bottom in the stack
- Select the **Start** ▶ button in VEXcode to run the project



Using the VEXnet Server

VEX VEXnet Server

Everything you need to teach with VEX can be accessed directly from this local server. The VEXnet Server is ideal for classrooms, workshops, and events where internet access is limited.

Select a platform tile below to access VEXcode, curriculum, build instructions, and resources from the VEX Library and API Reference.



We're running out of food - time to go hunting!



**Code our 123 Robots
to hunt and bring
back animal(s) for
our group.**

Hunting Challenge

Build an algorithm that can detect and 'catch' animals anywhere on the field!

- Each animal triggers a different reaction when captured (ie. play sound, act happy)
- Robot should hunt continuously for at least 90 seconds
- *Extra challenge: Use the Print console to show your progress!*

Wrap Up

- Share your projects! How did you approach the challenge?
- What ideas has this experience inspired for your classroom/setting?
- Alternate Coding Methods page in the Unit Overview of each STEM Lab offers guidance
 - [Example - Touch to Code STEM Lab Unit](#)

In Lab 1, students will drive over the letters of a word written on a 123 Tile. The following is a possible Coder card solution for the Lab 1 activity that will move the 123 Robot in the same way that is shown in the animation in the Lab. Have students place the 123 Robot on the bottom-left corner of the 123 Tile and press the Start button on the Coder to run their project.



Example Coder solution for Lab 1

Here is a possible VEXcode 123 Solution for Lab 1, to drive over the letters in their word. This solution will move the 123 Robot in the same way that is shown in the animation in the Lab.



Example Solution for Lab 1 - Code and Read

Stay Connected

Let's Connect!

VEX PD+ Community: @Audra_Selkowitz
X (Twitter): @Audra_Selkowitz

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Take a VEX Masterclass — Introduction to VEX 123