

Ozobots: Daisy Girl Scouts

Think Like a Programmer

When Daisies are working on the Think Like a Programmer Journey, they learn that a **program** is an algorithm that has been coded into something that can be run by a machine. An **algorithm** is a list of steps that you can follow to finish a task (step-by-step instructions). And, they learn that **debugging** is finding and fixing problems in your algorithm or program.

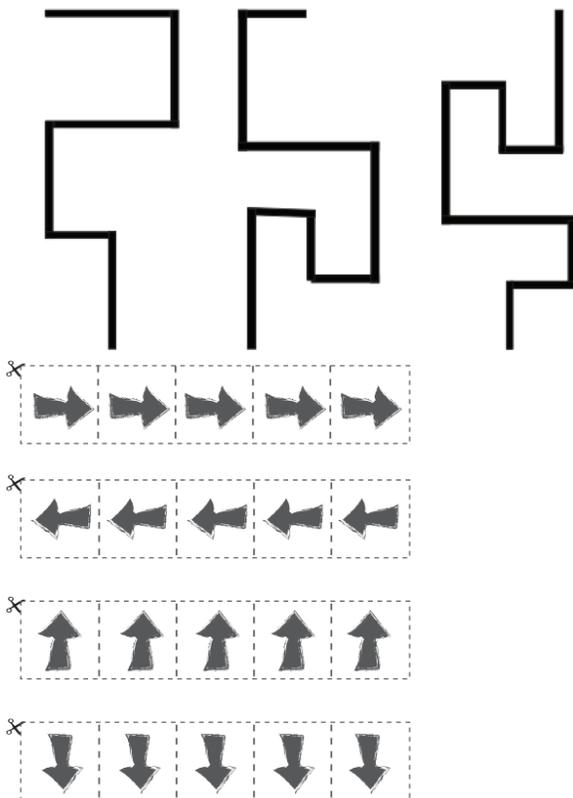
In the Volunteer Toolkit (VTK), volunteers are provided with unplugged activities (activities that can be conducted without the use of a computer or other electronic device) to teach Daisies about programming. However, with the Ozobots, girls can learn and practice programming with an actual robot.

Examples of unplugged activities in the VTK:

Sample Happy Map Trails for Think Like a Programmer 2

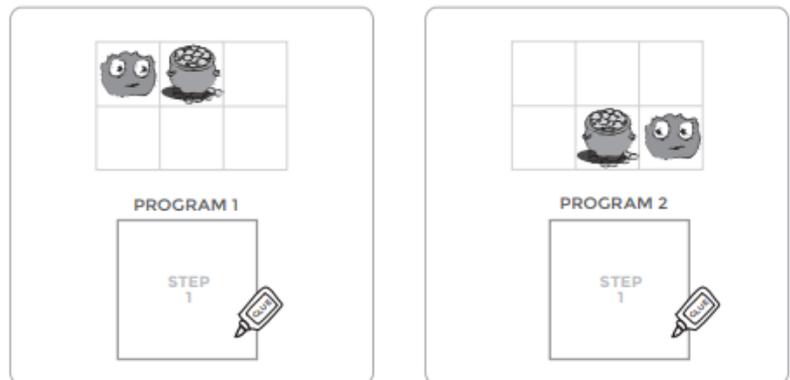
Prior to the meeting, prepare masking tape trails made of right angles, one for each group of 3-4 girls. Girls will create simple algorithms to navigate stuffed animals through to a prize. Put a prize at one end and a stuffed animal at the other.

Here are some ideas for Happy Map Trails:

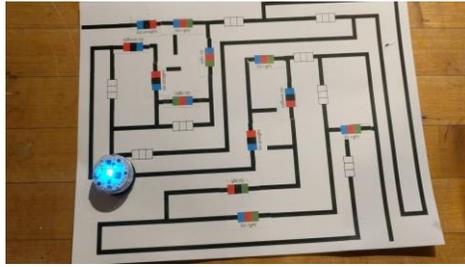


The Flurb's pot of gold is in danger! Help her get to it as quickly as possible before it disappears.

To show the Flurb how to get to her pot of gold, cut out the correct arrows from the bottom of the page and paste them in the program slots by each of the picture maps.

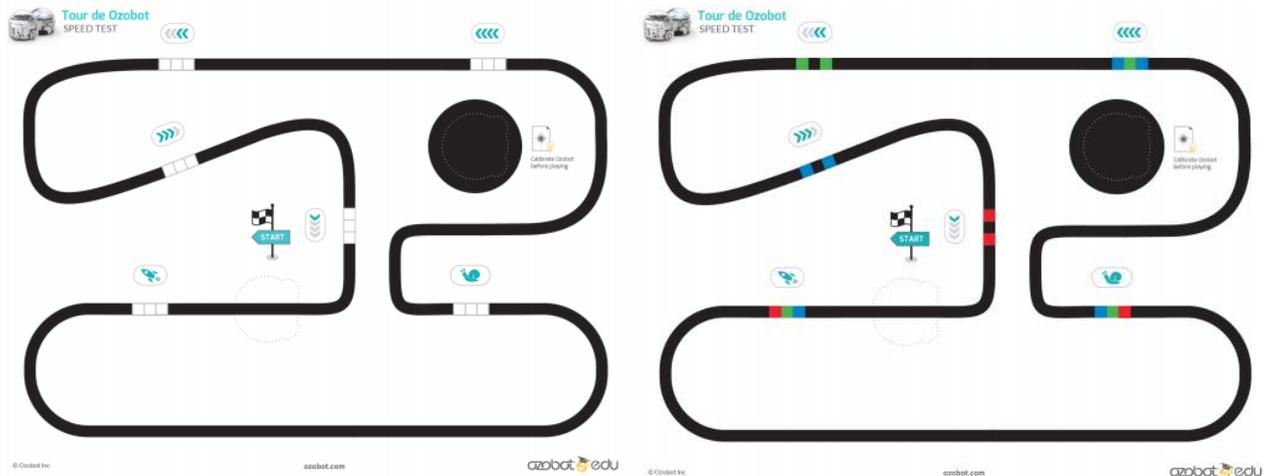


These same activities can easily be done with the Ozobots. Here's how:



Ozobots use downward facing cameras to detect the color of the line underneath it. The Ozobot will follow the black line and will read the color codes to complete specific instructions. Color codes are made with Ozobot markers girls can use to fill in the lines. Some of the color codes may tell the Ozobot which direction to go, what speed to move and other cool moves. Girls can decide which algorithm they want to use to complete a task. In other words, using a program to get the Ozobot from one point to another. If the codes do not get the Ozobot to the desired destination, the girls can debug the code and form a new algorithm.

Example:



Daisy Robotics

When working on the Robotics badges, Daisies learn that robots are machines programmed to move and act. They learn about **programs**, **algorithms** and **debugging**. They also learn that a **prototype** is when you invent something, like a robot, that you want to try out. First, you create a model or design as a prototype to show other people and test it out. And, they learn that an **engineer** is a person who invents something to solve a problem.

Badge 1: What Robots Do

- Talk to your Daisies about what robots do and use the Ozobot as an example.

Badge 2: How Robots Move

- Talk about the parts of robots. The **brain** is the controller that takes directions from a program. The **body** is made of mechanical parts like wheels, gears, motors and grippers. **Sensors** are devices that help robots take in information from the world around them.
- Show your Daisies how to use their Ozobot and how to use the color codes to form algorithms and program their Ozobot to move.

Badge 3: Design a Robot

- Now that your Daisies understand what a robot is and how it moves, let them plan their own robot. Girls should create a prototype and share their ideas for feedback.

Daisy Coding for Good

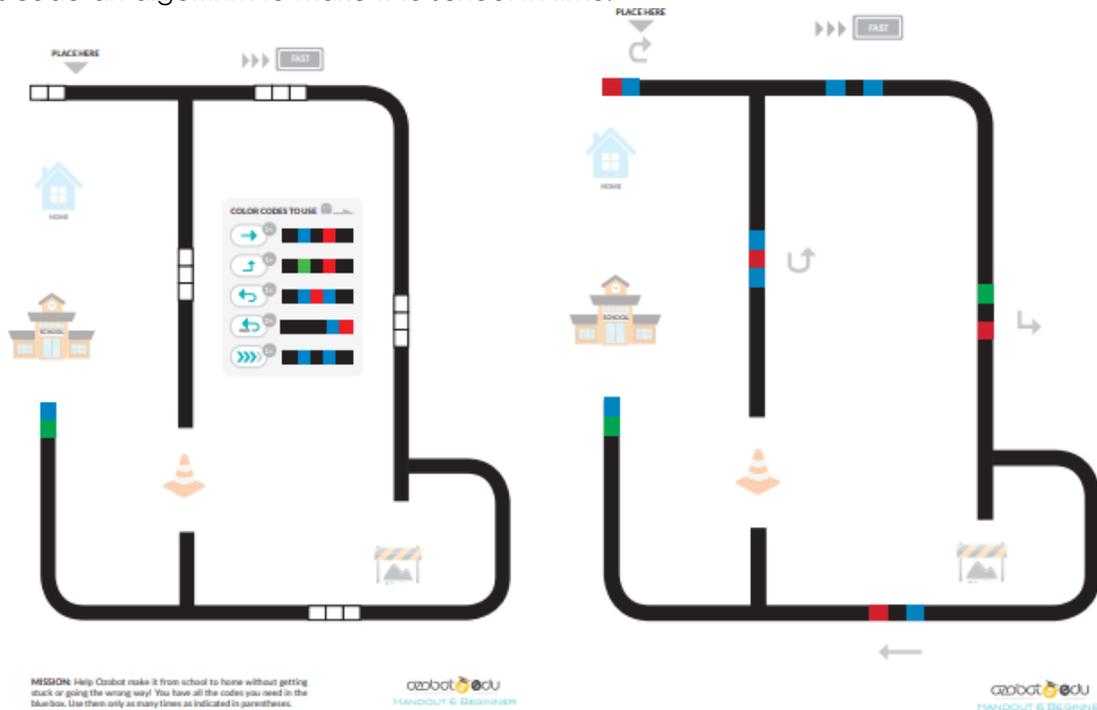
When working on the Coding for Good badges, Daisies will learn how to give computers step-by-step instructions, how video games are created and how people make apps. They learn that **apps** are software programs that run on computers, tablets or smart phones. **Code** is the language that computer scientists create and use to tell computers what to do. A **computer** is any device that stores information and follows instructions

from a program. **Digital games** are games you can play on your phone, computer, TV, tablet or gaming console. They can also be called video games. **Programming** is when a person creates a sequence of instructions, or an algorithm, that makes a computer or machine do something. And, a **sequence** is the step-by-step order in which instructions or events should happen.

Badge 1: Coding Basics

- In the VTK activities, girls instruct one another on directions to move across the room, the steps to making a s'more (is it always the same?), the steps to get ready for school and then they instruct one another on more tasks to see if their algorithms work. In addition, to the unplugged visual, you can add in the Ozobot in place of the codeSpark Academy activities.

Have girls code an algorithm to make it to school in time:



Badge 2: Digital Game Design

- Girls explore board games, such as Checkers or Candyland, and create their own game. Talk about how some aspects of board games are similar to video games and how you need algorithms to create them.
- Girls also create a maze on paper for the planning stages of their digital game. They share their maze with a partner to test.

Badge 3: App Development

- Girls are given a 'problem' scenario to create an app to help find a lost puppy. Girls draw out on paper each action and step they would take to help find the puppy. Every step is part of their program that designs their app. Each step needs to be drawn out in order without missing a step.

You can help girls create their own game design and use the app development processes while doing so with the Ozobot.

FAIRYTALE ELEMENTS LESSON I TEMPLATE

Title of Fairytale _____

| Fairytale Elements | Ideas | Your Notes |
|-------------------------------------|---|------------|
| Beginning/Opening | Describe the opening. How did it grab your attention? What are the "traditional" elements? | |
| Setting | Where did the story take place? Be sure to add details! | |
| Characters | Hero/heroine, Villain, Family | |
| Problem/Conflict | All good fairytales have some sort of problem that needs to be solved. What was the conflict in this story? | |
| Ozobot Bit Movement/Behavior | If your Ozobot Bit was the main character in this story, what activity or behavior could it do? | |
| Solution to Problem | How was the conflict solved? | |
| Conclusion | At the very end, what was the outcome? What traditional language was used? | |

OZOBOT'S FAIRYTALE SKETCH

LESSON I

By _____

Title of Fairytale _____

Ozobot Bit Character Description _____

Describe the behavior of Ozobot during your story _____

In the box below (or on a blank sheet of paper if needed), **sketch out the movements and behaviors** you want your Ozobot Bit to complete. Be sure to include arrows to indicate the direction your Ozobot Bit is moving so you will be able to program your Ozobot Bit correctly.

After you have your game design ready, girls can create their own boards for the Ozobot to follow and draw their own version of the storyline along the path.