

Direct Instruction Summary

Intro to Color Codes 01: Basic Training



1. Introduction

After today's lesson, students will be able to power Ozobot on and off, calibrate their bot, and program their bot with lines and Color Codes.

2. Functions of the Power Button

Single quick press - turns bot on

When bot is on, single quick press turns bot off

When flashloading in Blockly, quick double press runs the loaded program.

3. Calibrating Your Ozobot

- Create a black dot a little larger than the bottom of Ozobot.
- Turn the bot on
- Place bot on black dot
- Hold power button for 3-5 seconds (or until top LED flashes) and release power button
- Bot should spin, move off the dot and show a green light on top.
- If bot shows red light on top, try again.

Calibrating helps the bot's sensors know the light in the space so the sensors work properly. Calibrate at the beginning of each session. Calibration is the first troubleshooting step.

4. Line Following - Straight, Corners, Curves

Place bot on Start 1. Observe the bot.

Fill in the black line from Start 2. Observe the bot.

A hint about corners: a 90 degree corner or square corner works best with Ozobot. If a corner is less than 45 degrees, Ozobot might have trouble continuing on the line.

5. Line Following - Colors

Find Start 3. Fill in the colored lines as labeled. Notice that the lights on the bot mirror the color of the line it is traveling on.

The last two color blocks are the Win/Exit (play again) Color Code.

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6. Color Codes

A Color Code is a group of colored blocks found along a black line that instruct Ozobot to perform certain actions. For Ozobot to read a Color Code correctly, there needs to be at least an inch of black line before and after the code without a Color Code or intersection. Exceptions are: Spin/Tornado, need 1.5 inches after the code; and Zigzag/Backwalk need 2.5 inches after the code to perform the code properly and continue line-following.

7. Symmetric Color Codes

Symmetric codes will work the same whether the bot reads them from one direction or the other. When looking at a symmetric code the color pattern is symmetric.

Students fill in the color codes according to the letter labels on the activity sheet under Symmetric Codes and complete the black line. Students will describe the action of the bot in the spaces to the left of each code.

Top Color Code is Turbo, middle is U-Turn, bottom is Slow.

8. Asymmetric Color Codes

Asymmetric Color Codes program the bot to perform different actions when read from different directions.

Students fill in the color codes according to the letter labels on the activity sheet under Asymmetric Codes and complete the black line. Students will describe the action of the bot in the spaces above each line.

Conclusion

Have students explain to a partner, in writing, or in a group discussion:

1. a problem they encountered and how they attempted to solve it
2. how their bot behaved based on the Color Codes used and if the bot demonstrated the correct outcome
3. how to calibrate their Ozobot
4. what a Color Code is