

# OZOBLOCKLY BASIC TRAINING LESSON 1: SHAPE TRACER LEVEL 1

PREPARED FOR OZOBOT  
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## Essential Question

How can we make Ozobot Bit move using programming?

## Information

The OzoBlockly games (<http://games.ozoblockly.com>) will teach the OzoBlockly language and general programming concepts. Both students who have had experience with Blockly or Scratch and those who have not will enjoy all levels of the tutorials. The practice will prepare students to create their own programs, load the program onto Ozobot and run the program.

The simulated version of the Ozobot Bit that is available in the OzoBlockly games is very good at following commands exactly. The real Ozobot Bit is very good at following commands too. However, the real Ozobot Bit may not turn as precisely as the simulated Ozobot Bit. This is related to the wheels. It is important for students to understand that the real Ozobot Bit will approximate the movements, especially the turns. Students' program for the robot may need to compensate for this. Can they build something into their program to help the Ozobot Bit reach the goal?

## Grouping

Groups of two or three students

## Materials

- Tablet or computer with the Ozobot Games website, <http://games.ozoblockly.com> and the OzoBlockly editor <http://ozoblockly.com/>
- Ozobot Bit, 1 per group of 2-3 students
- Blank paper for sketching

## **Age/Grade Level**

Grade 2 and up. Older students may move more independently through the levels of the tutorials. The tutorials are appropriate for all levels to learn the OzoBlockly programming language.

## **OzoBlockly Programming Topics**

Free Movement, Light Effects

## **OzoBlockly Mode**

Use mode 2 or higher

## **Lesson Duration**

45 – 55 minutes

## **Vocabulary**

- *Ozobot Bit* - Little robot that can follow drawn lines or can be programmed using visual codes or through the OzoBlockly programming language
- *OzoBlockly* - A visual editor which allows to create programs by plugging blocks together. The blocks can be used to control Ozobot Bit's behavior like movement, LED lights, etc.
- *Rotate Right or Left* - Approximate 90° turn
- *Rotate Slightly Right or Left* - Approximate 45° turn
- *Steps* - a unit of movement forward
- *Line Following* - Ozobot's default capability of sensing and following lines on paper or digital screens

## **Overview**

1. Students play the tutorial games 1-10 to introduce them to OzoBlockly and programming concepts.

Concepts:

- Visual programming basics
- Movement forward
- Turn or rotate
- Setting LED colors
- Loading Ozobot and running the program

2. Students will write their own tutorial level in the OzoBlockly Editor.

*Note: Levels 4, 7, and 10 are Ozobot Bit only levels. Students must use the Ozobot Bit to test and run the completed program. The simulation feature is disabled.*

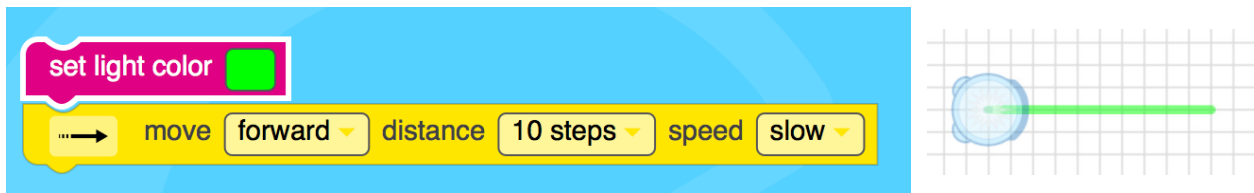
## ACTIVITY

### 1. Guided Class Activity



#### Level 1

Show the class the Game 1. Demonstrate to the class how Ozobot's image can move forward or back using a block from "Movement". The units of measurements are "steps". Show the students how to set and change the LED light color using the block from "Light Effects".



#### Level 2

Explain that Ozobot Bit can make turns. For this we use the "Rotate" block found in "Movement".

Have the students experiment with movement and rotation. Question the students, "how far does the Ozobot Bit move when programmed to turn a "slight left" versus a "left" turn?"

Discuss 45° rotation versus 90° rotation. Challenge the students to find how many degrees are in a U-Turn.

Students solve level 2

After students have discussed and learned the basic movement and programming,

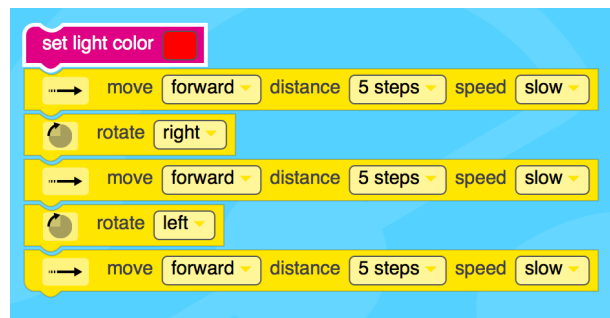


Figure 1: Solution to Level 2

**allow students to complete the 10 levels.** Note that an Ozobot Bit will be necessary to run the program on levels 4, 7, and 10 as the simulator is disabled. This gives the students practice calibrating and loading the program onto Ozobot Bit. Click the "Help" button for more information on how to load Ozobot Bit.

## 2. Independent Activity: Create Level 11

### Objective

Students will write their own game level 11.

### Procedure

Now that the students have had a little practice with Ozoblockly, it is their turn to write a game.

1. Have the students sketch a path on paper to be the basis of Level 11. The path should be slightly more difficult than levels 1-10.

Suggested Rules:

- The path should change colors at least twice
  - Ozobot Bit should have to double back on at least one path to complete the level
  - The turns must be 45°, 90°, 180° or a combination of these
2. Go to <http://ozoblockly.com/> on a computer or tablet.
  3. Choose "Beginner" (2) or "Intermediate (3)" levels
  4. Have students write the program.
  5. Students test program with Ozobot Bit.

*Notes: Student should not put the Ozobot Bit on the lines that they drew. Ozobot Bit should be able to complete the task without line following. The path the students drew is merely an abstract sketch.*