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## **THE CLASSES ON THE MOON**

2021-1-RO01-KA220-VET-000028172



# Learning coding with ROBOTS

Working with robots doesn't mean that you must know how to code. They can also be used to learn programming from the beginner level.

There are several platforms that can be used for this purpose and several robots.

To use some of them we need an account, but most can be used without having an account too.



# ROBOTICS ON HOUR OF CODE PLATFORM

<https://hourofcode.com/ro/en/learn/robotics>

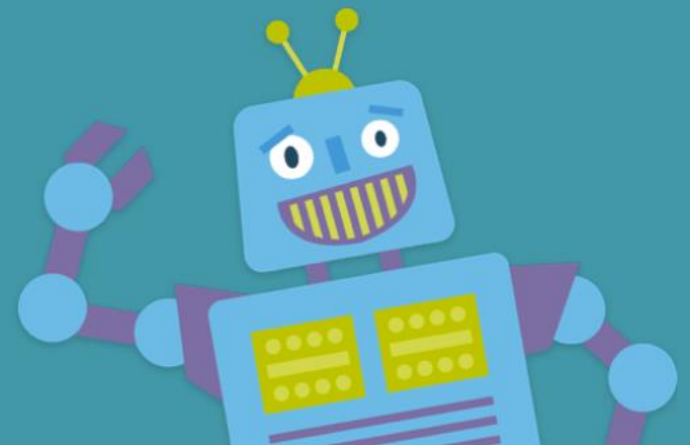
HOUR  
OF  
CODE

ACTIVITIES HOW-TO PROMOTE FAQ

English

## *Robotics and Circuits*

Got robots or physical computing kits? Use them with the activities below and make a tangible Hour of Code for students of any age! Some activities even offer a simulator so you can get started without any hardware.



lab.open-roberta.org/#

PROGRAM NEPOprog ROBOT CONFIGURATION EV3basis

+ start show sensor data

EV3

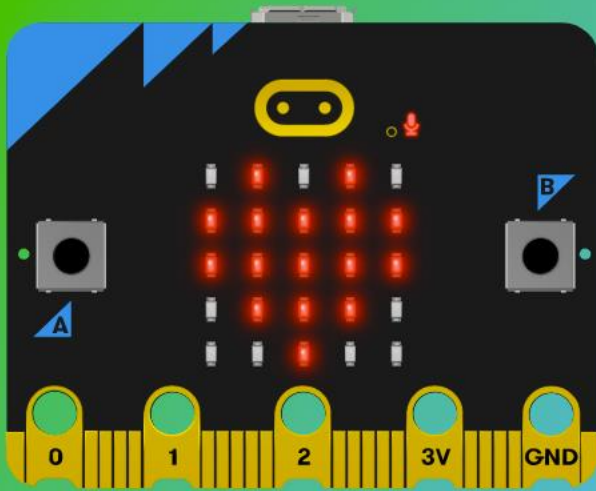
Choose the robot from more than 20 types

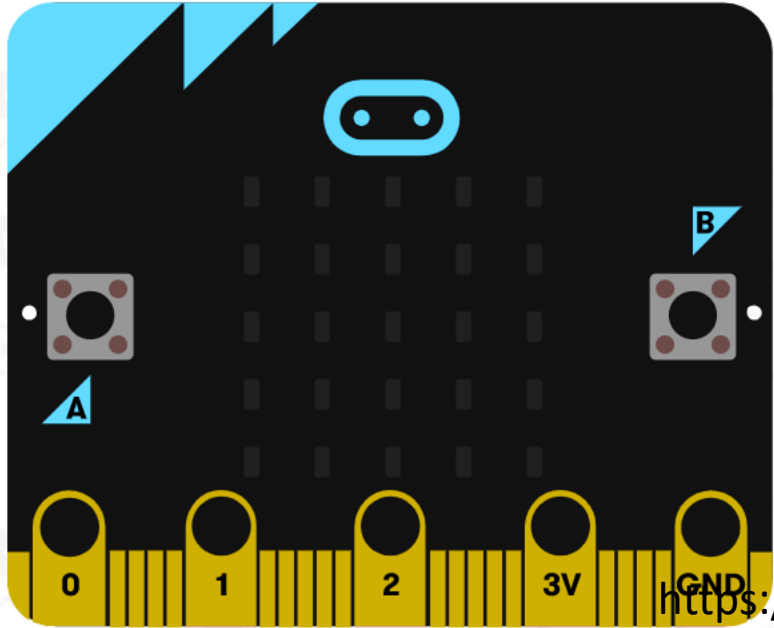
EV3

NXT

micro:bit

# BBC micro:bit





Search...



Basic

Input

Music

Led

Radio

Loops

Logic

Variables

Math

<https://www.youtube.com/watch?v=TTWiLjxcMbl>

on start

forever



Download

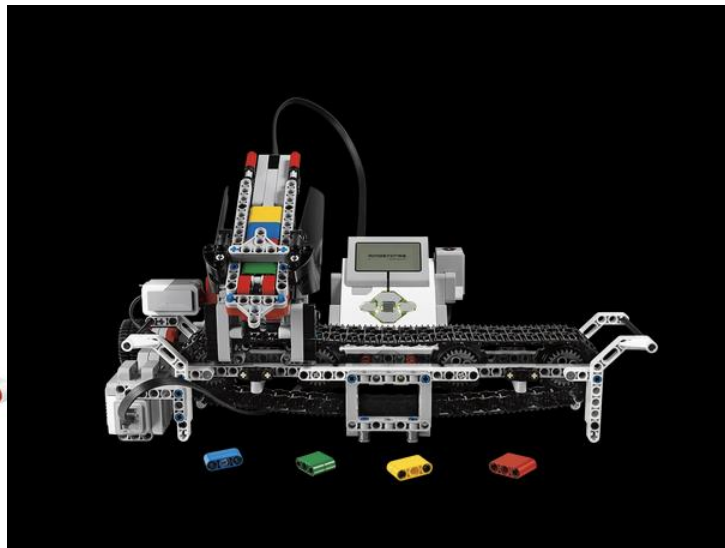
Vio



<https://www.youtube.com/watch?v=TTWiLjxcMbl>

## EV3 Mindstorms from LEGO

WINNER  
2019 AWARDS  
of  
EXCELLENCE  
TECH & LEARNING

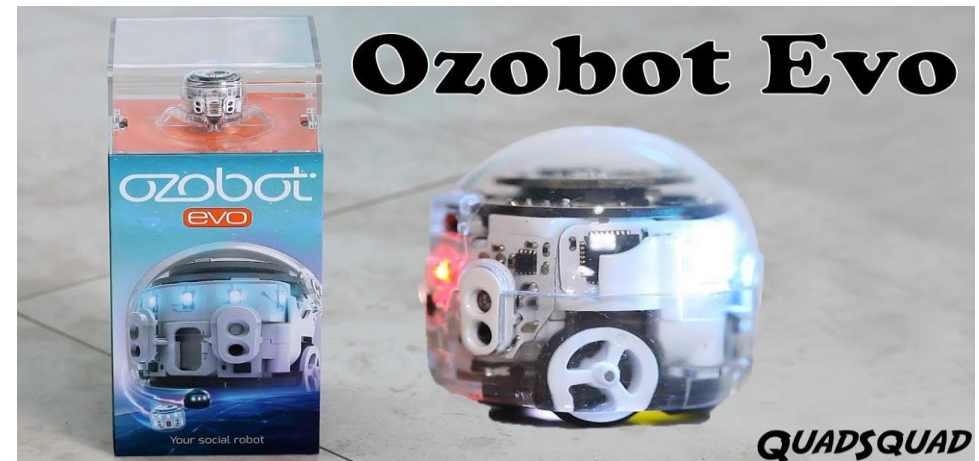


# OZOBOT



These tiny robots come in a few forms

- the Bits model having only wheels and a sensor
- the more advanced Evo model has Bluetooth connectivity and programming capability as well.





- using different colored markers to denote different directions, users can draw paths for them to follow and give commands such as slow down, speed up, or stop.



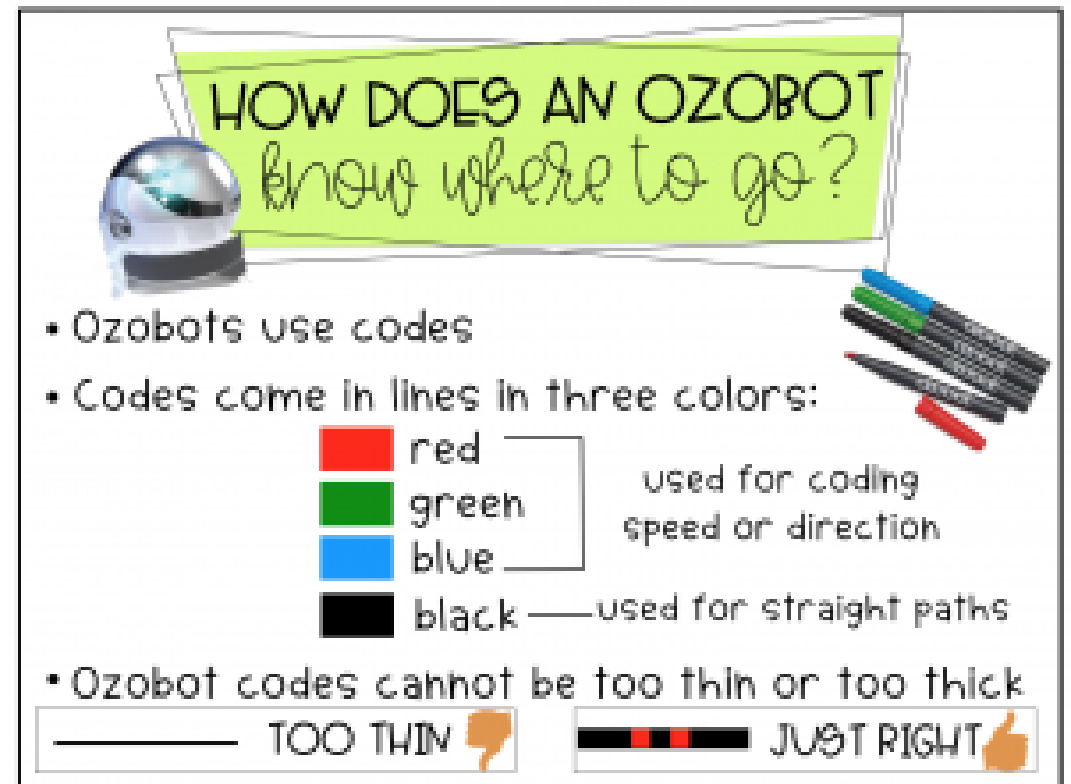
<https://www.youtube.com/watch?v=VBdBG1TSgR8>

# WHY THE OZOBOT?

Through ozobet games, you can develop several essential skills,

including:

- Creativity
- Collaboration
- Communication
- Perseverance
- Problem solving



**HOW DOES AN OZOBOT know where to go?**

- Ozobots use codes
- Codes come in lines in three colors:
  - red
  - green
  - blue
  - black — used for straight paths

used for coding speed or direction

- Ozobot codes cannot be too thin or too thick

TOO THIN (thin black line)      JUST RIGHT (thick black line with red, green, and blue lines inside)

# EVO OZOBOT

The weight of the robot is 17g and the size of the robot is 2.5 x 2.5 x 2.5 cm.

Ozobot Evo is recommended for children aged 9 years and is equipped with:

- a durable polycarbonate housing
- 1 on / off button
- 8 optical sensors for detecting lines and color codes
- 7 LEDs
- 2 wheels and 2 engines
- proximity sensors



bit  
YOUR CREATIVE ROBOT.



# OZOBOT BIT ROBOTIC TOY FEATURES



## Ozobot™ Codes Explained

<p><b>Go Left</b></p>	<p>This code will cause Ozobot™ to turn left at the next intersection it comes to.</p>
<p><b>Go Right</b></p>	<p>This code will cause Ozobot™ to turn right at the next intersection it comes to.</p>
<p><b>Go Straight</b></p>	<p>This code will cause Ozobot™ to continue straight at the next intersection it comes to.</p>
<p><b>U Turn</b></p>	<p>This code will cause Ozobot™ to turn around 180°.</p>
<p><b>Jump Left</b></p>	<p>This code will cause Ozobot™ to turn 90° to its left and continue until it finds a new line to follow.</p>
<p><b>Jump Right</b></p>	<p>This code will cause Ozobot™ to turn 90° to its right and continue until it finds a new line to follow.</p>
<p><b>Jump Straight</b></p>	<p>This code will cause Ozobot™ to continue straight until it finds a new line to follow.</p>

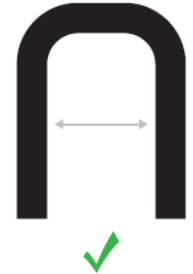
# CALIBRATION OF THE OZOBOTS

An important part of the proper operation of an ozobot is calibration. The ozobot must be calibrated to differentiate the white from the colored part on the paper, to follow the lines and read the color codes correctly.

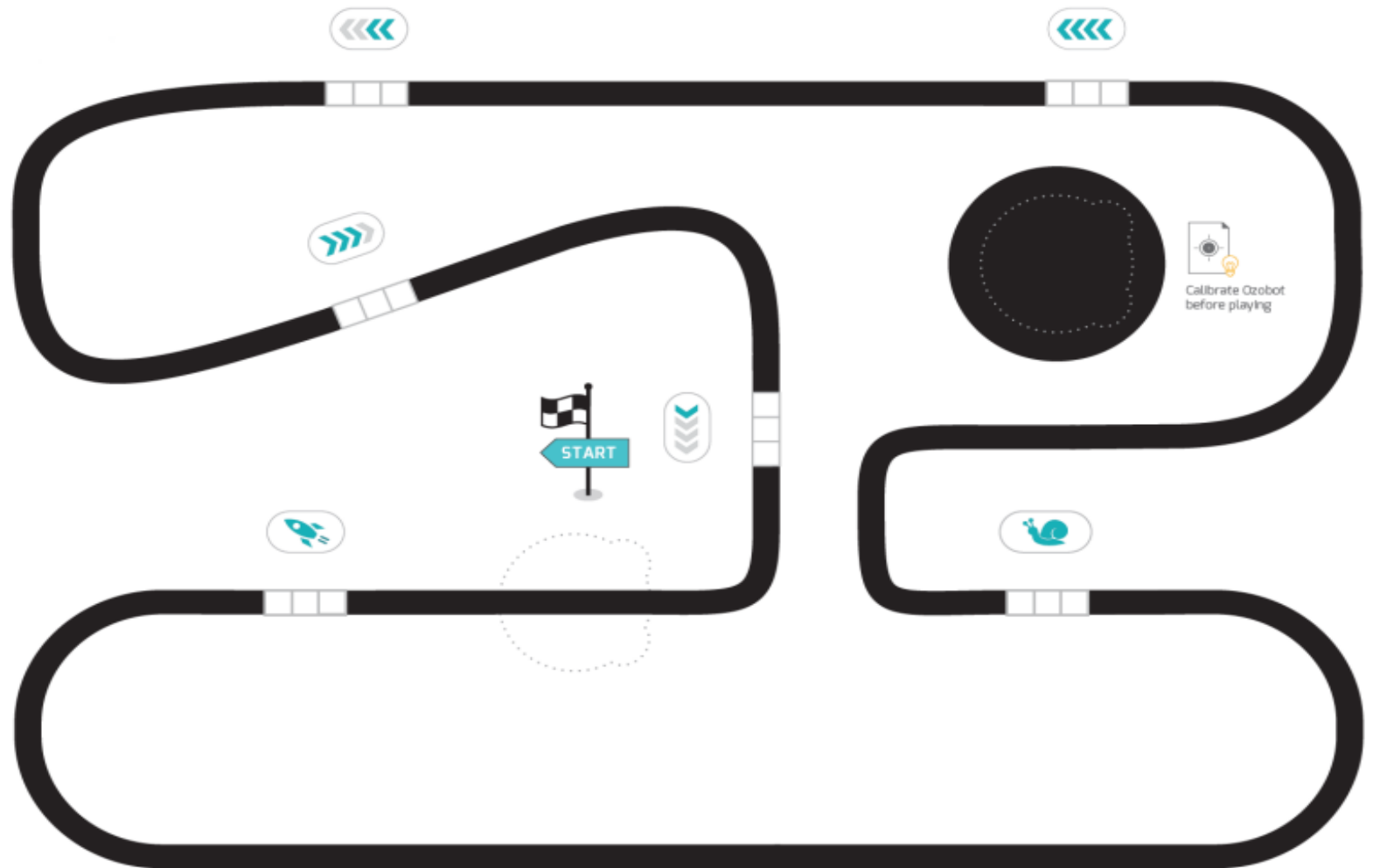
The ozobot will need to be calibrated whenever a new activity is started, when the paper or playing surface is changed or the environmental conditions change, for example light.

To calibrate an ozobot, draw a black circle slightly larger than the ozobot, then place the ozobot on the circle. Hold down the power button for about 2-4 seconds until the ozobot flashes white, then release the power button, making sure it succeeds specifically flashes green and then moves out of the circle.








<https://ozobot.com/create/color-codes>



### Coduri pentru viteze ( N – negru, V- verde, A- albastru, R-roșu)

	Foarte încet	SNAIL DOSE	<b>RVA</b>
	Încet- viteza 1	SLOW	<b>RNR</b>
	Plimbare viteza 2	CRUISE	<b>VNV</b>
	Repede – viteza 3	FAST	<b>ANA</b>
	Mai repede - viteza 4	TURBO	<b>AVA</b>
	Foarte repede - viteza 5	NITRO BOOST	<b>AVR</b>



Coduri pentru direcții (N – negru, V- verde, A- albastru, R-roșu)

	<b>La stânga</b>	GO LEFT	VNR
	<b>La dreapta</b>	GO RIGHT	ARV
	<b>Înainte</b>	GO STRAIGHT	ANR
	<b>Sare de pe linie la stânga</b>	LINE JUMP LEFT	VRV
	<b>Sare de pe linie la dreapta</b>	LINE JUMP RIGHT	RVR
	<b>Sare de pe linie în față</b>	LINE JUMP STRAIGHT	VAV
	<b>Întoarcere 180°</b>	U TURN	ARA
	<b>Întoarcere la final de rând</b>	U TURN (LINE END)	NAR

**SPEED** →

SNAIL DOSE      SLOW      CRUISE

FAST      TURBO      NITRO BOOST

**WIN/EXITS** →

WIN/EXIT (PLAY AGAIN)

WIN/EXIT (GAME OVER)

**DIRECTION** →

GO LEFT      GO STRAIGHT      GO RIGHT

LINE JUMP LEFT      LINE JUMP STRAIGHT      LINE JUMP RIGHT

U TURN      U TURN (LINE END)

**COUNTERS** →

FIVE DOWN TO STOP

ENABLE X-ING COUNTER

ENABLE TURN COUNTER

ENABLE PATH COLOR COUNTER

ENABLE POINT COUNTER

POINT +1

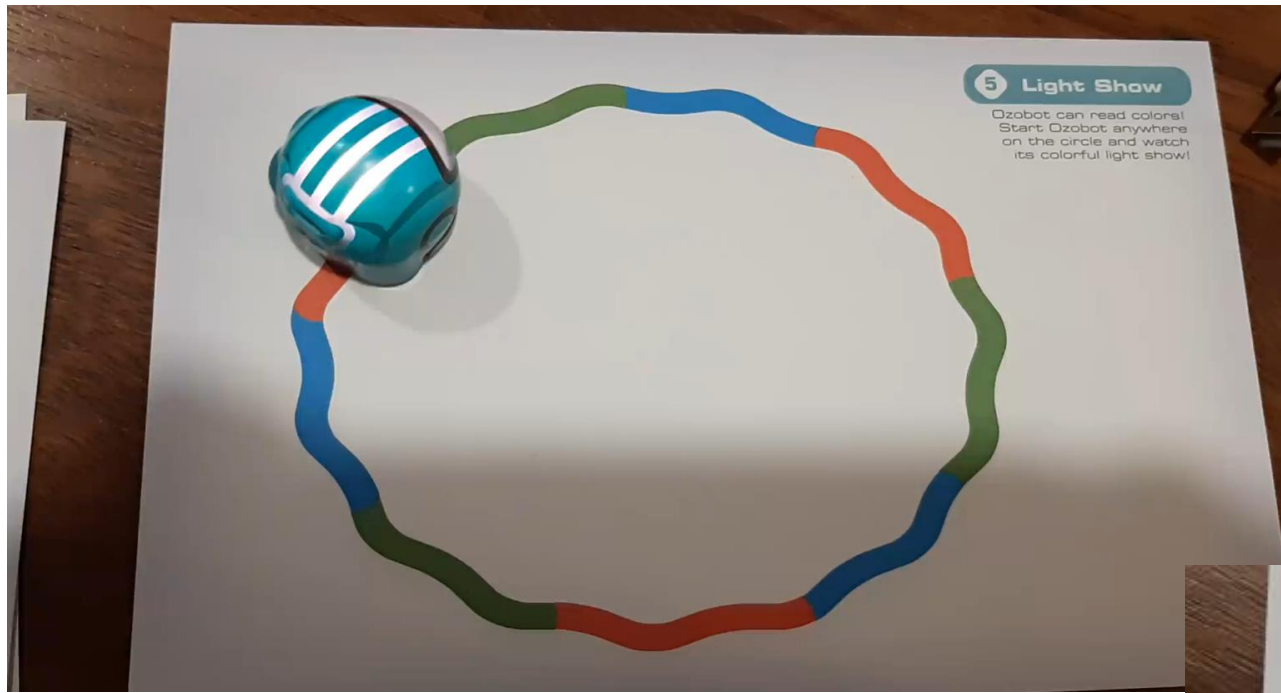
POINT -1

**TIMERS** →

TIMER ON (30 SEC. TO STOP)      TIMER OFF      PAUSE (3 SEC.)

**COOL MOVES** →

TORNADO      ZIGZAG      SPIN      BACKWALK



# THE OZOBOT GOES ON HOLIDAY IN ... FLORIDA

<https://youtu.be/0WB49QMPnKE>



# Creating stories Storytelling with Ozobot

<https://www.youtube.com/watch?v=R8IH6RxdGbg>

<https://www.youtube.com/watch?v=2C-jbsfBJvA>

<https://www.youtube.com/watch?v=OtUXrVGW3r0>

<https://www.youtube.com/watch?v=Xd686C5-Ds0&t=1s>

# How to Teach Math with Ozobot

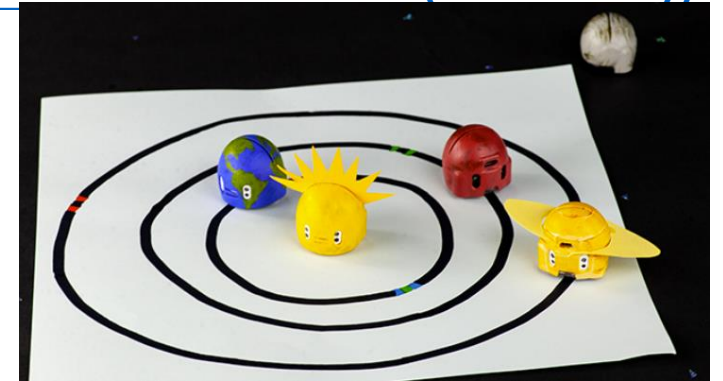
## Odd or Even Shopping

<https://www.youtube.com/watch?v=z1xbnbM8U-s>

Can you count the total number of candy bars, fill in the information on your shopping list, and color in the spin Color Code above the candy bars?

# How to Teach SCIENCE with Ozobot

## [Recreate a Constellation \(OzoBlockly\)](#)



<https://twitter.com/i/status/1024940049937227777>

<https://www.youtube.com/watch?v=jNrtKRzgY7o>

# PROJECTS WITH OZOBOTS

Ozobot Earth Day Challenge | Bot Beach Cleanup

<https://www.youtube.com/watch?v=A-gJaULVc1o>

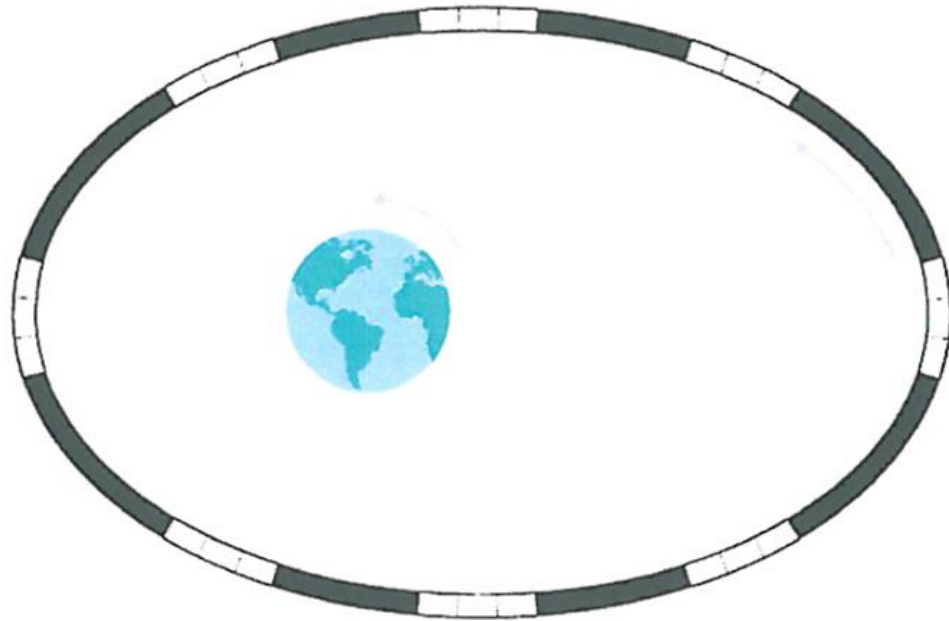


A lesson allows students to study a simple OzoBlockly program in which Evo tells the number of inches traveled.

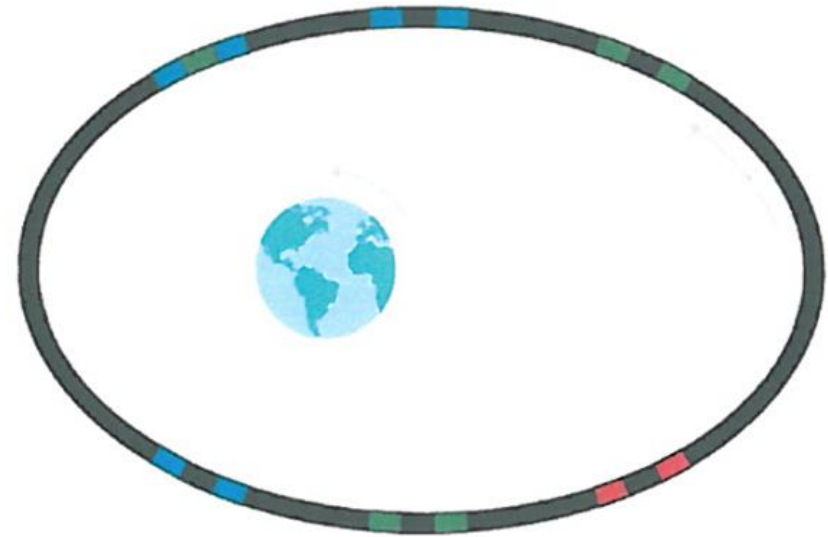
<https://youtu.be/zypC4xYG0w0>



# CUM CĂLĂTOREȘTE LUNA ÎN JURUL PĂMÂNTULUI



**Soluție:**



OZOCODES



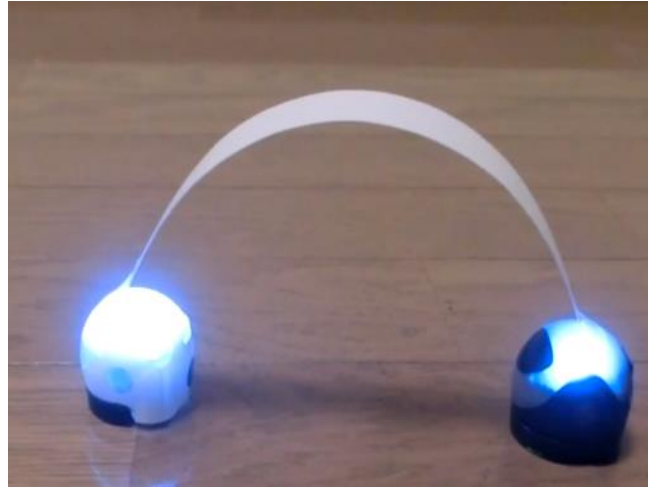
# GAMES WITH TWO OZOBOTS

[https://youtu.be/v7\\_YKOGYm5Y?list=PLznVXVRRmqFdk\\_O5Efnj2AwSD67m41aZY](https://youtu.be/v7_YKOGYm5Y?list=PLznVXVRRmqFdk_O5Efnj2AwSD67m41aZY)

[https://youtu.be/O7\\_rDC0KW80?list=PLznVXVRRmqFdk\\_O5Efnj2AwSD67m41aZY](https://youtu.be/O7_rDC0KW80?list=PLznVXVRRmqFdk_O5Efnj2AwSD67m41aZY)

## GAMES WITH OZOBOTS – BB 8

[https://www.youtube.com/watch?v=EVSXa9Eknk8&list=PLznVXVRRmqFdk\\_O5Efnj2AwSD67m41aZY&index=4](https://www.youtube.com/watch?v=EVSXa9Eknk8&list=PLznVXVRRmqFdk_O5Efnj2AwSD67m41aZY&index=4)





# COMPUTER OZOBOT PROGRAMMING

- Making the program on ozoblockly.com or other tools.
- Ozobot calibration
- Loading the program
- Program testing



<https://ozoblockly.com/editor?lang=en&robot=evo&mode=2>

<https://ozoblockly.com>

OzoBlockly is a visual editor in which, by connecting blocks, you can create programs through which we can control the behavior of a BIT or EVO ozobot.

It is as powerful as any other programming language. It can be used to develop programming skills from a very young age. Kids learn how to build programs using drag-and-drop blocks, how to load them on the ozobot, and how to run them.

# OZOBLOCKLY

The screenshot displays the Ozoblockly web editor interface. At the top, the browser's address bar shows the URL `ozoblockly.com/editor?lang=en&robot=bit&mode=2`. The page title is "Unnamed Program".

On the left side, there is a sidebar with the Ozoblockly logo and "bit evo Beginner" text. Below this are five numbered buttons (1-5), with button 2 highlighted. A vertical menu lists categories: "Movement", "Light Effects", "Timing", and "Loops". At the bottom of the sidebar, there is a "LOAD YOUR bit" button and a "FLASHING" button with a lightning bolt icon.

The main workspace, titled "Unnamed Program", contains three code blocks stacked vertically:

- A pink block: "set top light color" with a red color selection.
- A yellow block: "move forward" with a distance of "10 steps" and a speed of "medium".
- A blue block: "wait 3 second(s)".

On the right side, there is a vertical toolbar with icons for help, undo, redo, save, and settings.

At the bottom of the browser window, the Windows taskbar is visible, showing the search bar with the text "Tastați aici pentru a căuta", several application icons, and the system tray with the date "10.10.2020" and time "12:21".

# OZO Blockly

bit evo  
Beginner

1 2 3 4 5

→ Movement

💡 Light Effects

⌵ Timing


## Unnamed Program

- 💡 set top light color ■
- move forward distance 10 steps speed medium
- ⌚ wait 3 second(s)

C > 1 2 3 ?

Calibrate once per session, before the first load. [Get Help](#)

Calibration Complete?



⚡ Load Bit ⌚ 0m 7s

Progress bar

📄 Press to Activate

📄 Press to Activate

📄 Press to Activate

📄 Press to Activate

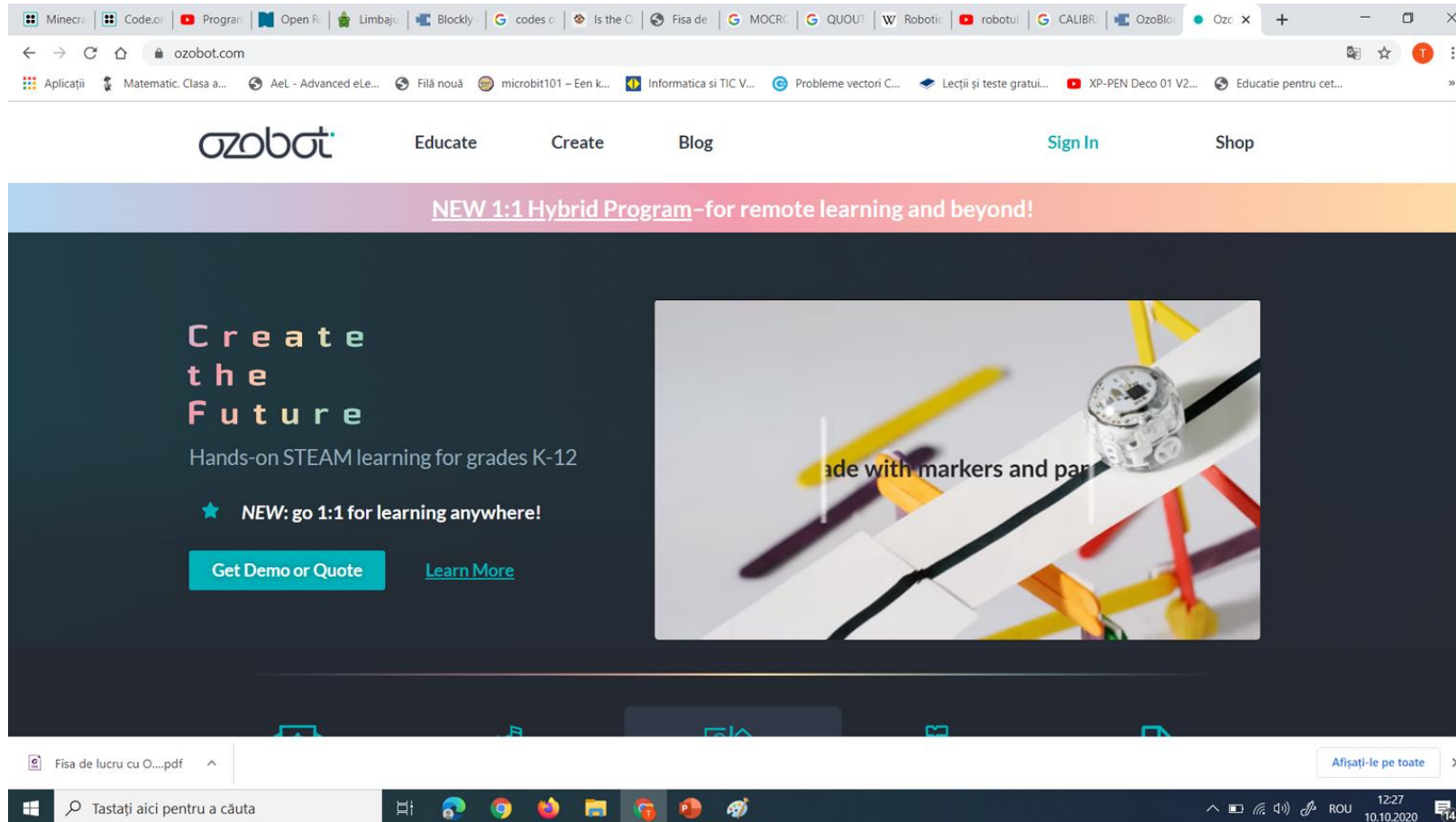
# OZOBLOCKLY GAMES

<https://games.ozoblockly.com/ozotown-basic>

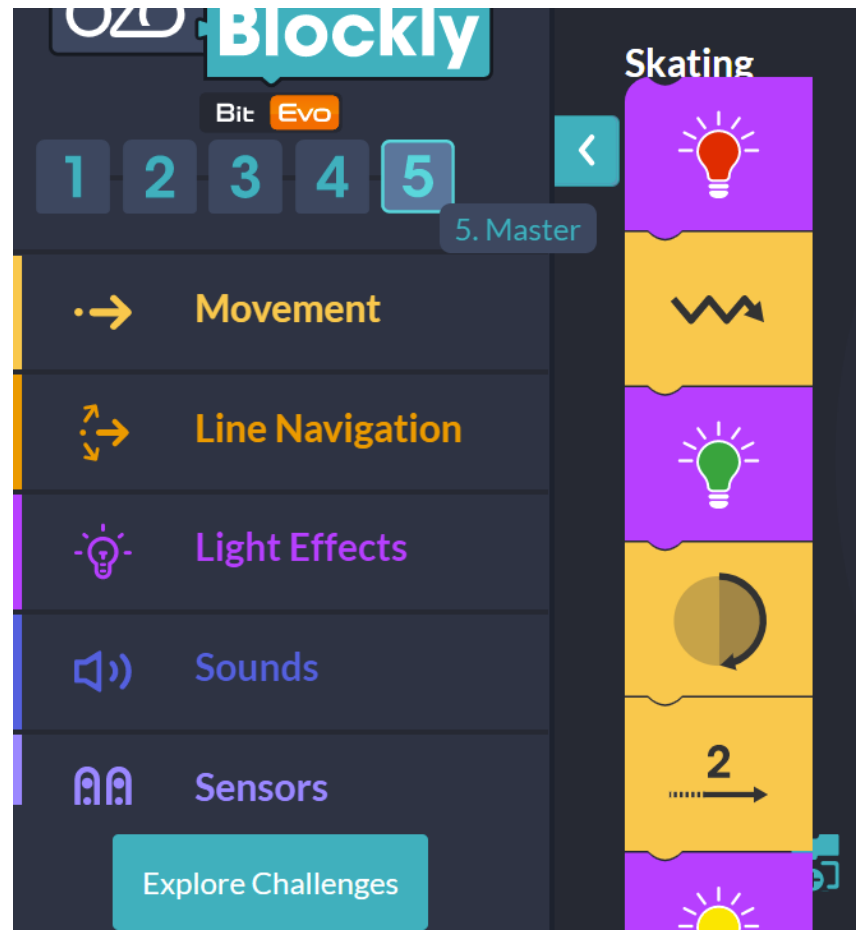
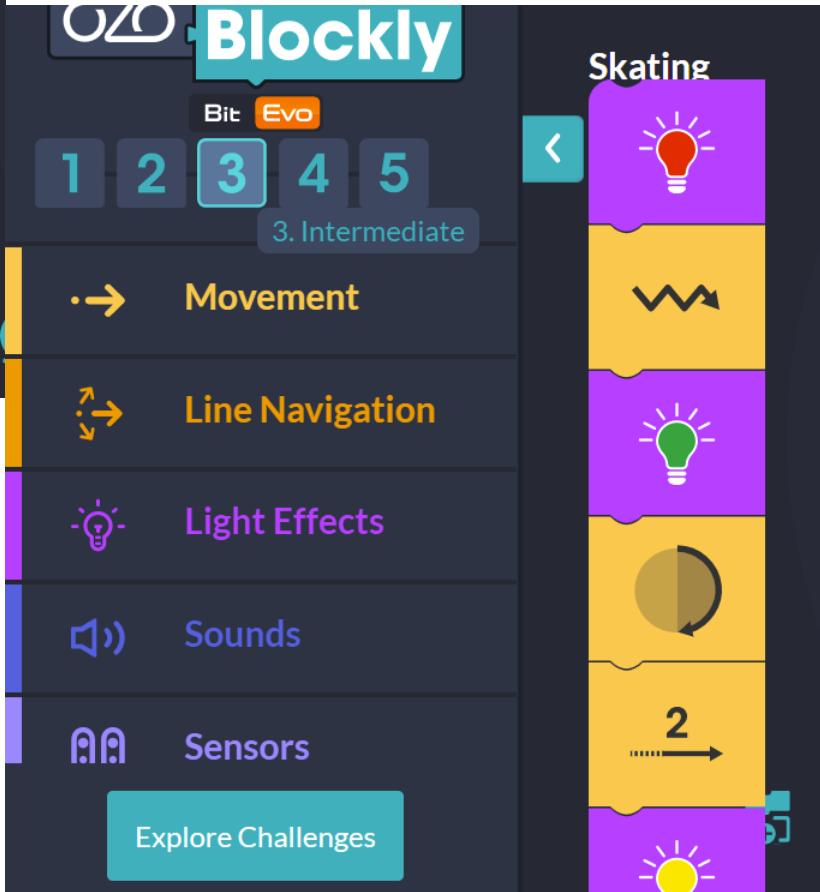
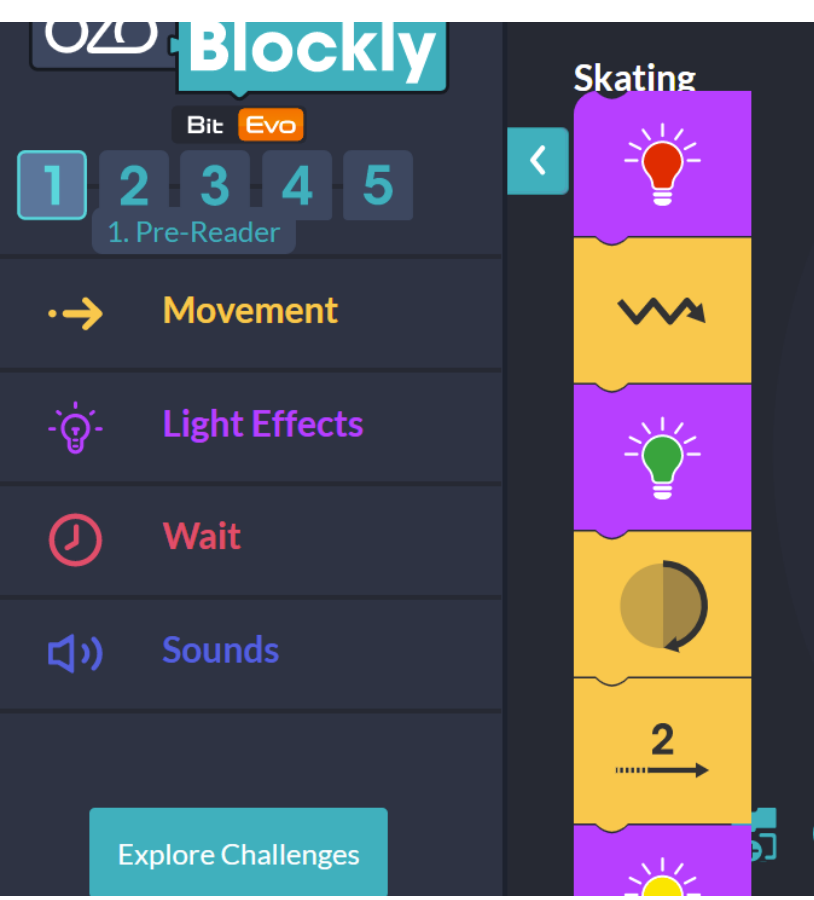
The screenshot shows a web browser window displaying the Ozoblockly Ozotown Basic game. The browser's address bar shows the URL `games.ozoblockly.com/ozotown-basic?lang=en&level=2`. The game interface features a dark blue background with a large, faint 'Ozobot' logo in the center. On the left side, there is a 'Line Navigation' panel with a directional arrow icon and a small illustration of the Ozobot robot. The main workspace contains three orange code blocks: 'follow line to next intersection or line end', 'pick direction: straight', and another 'follow line to next intersection or line end'. On the right side, there is a control panel with a 'Run' button, a 'Load Ozobot' button, and a large white Ozobot icon. At the top right, there is a 'Goal' button and a progress indicator with numbered circles from 1 to 10. The bottom of the browser window shows the Windows taskbar with various application icons and the system tray displaying the date and time as 12:25 on 10.10.2020.

# OZOBOT PLATFORM

## [HTTPS://OZOBOT.COM/](https://ozobot.com/)



The screenshot shows a web browser window displaying the Ozobot website. The browser's address bar shows the URL [ozobot.com](https://ozobot.com/). The website's navigation menu includes "Educate", "Create", "Blog", "Sign In", and "Shop". A prominent banner at the top of the page reads "NEW 1:1 Hybrid Program - for remote learning and beyond!". Below this, the main heading "Create the Future" is displayed in a colorful, pixelated font, followed by the text "Hands-on STEAM learning for grades K-12". A blue star icon is next to the text "NEW: go 1:1 for learning anywhere!". Two buttons are visible: a teal "Get Demo or Quote" button and a blue "Learn More" link. To the right, a video player shows a close-up of a small, clear robot (the Ozobot) on a white surface, with the text "made with markers and paper" overlaid. The browser's taskbar at the bottom shows various application icons, the search bar with the text "Tastați aici pentru a căuta", and the system tray with the date "10.10.2020" and time "12:27".



## Using the ozobot on simulator

<https://ozobot.com/blog/7-ozobot-lessons-to-adapt-for-virtual-learning-at-home>

<https://games.ozoblockly.com/shapetracer-freeform>

**<https://games.ozoblockly.com/>**

**! <https://ozobot.com/create/challenges>**

<https://ozoblockly.com/editor?lang=en&robot=evo&mode=2>

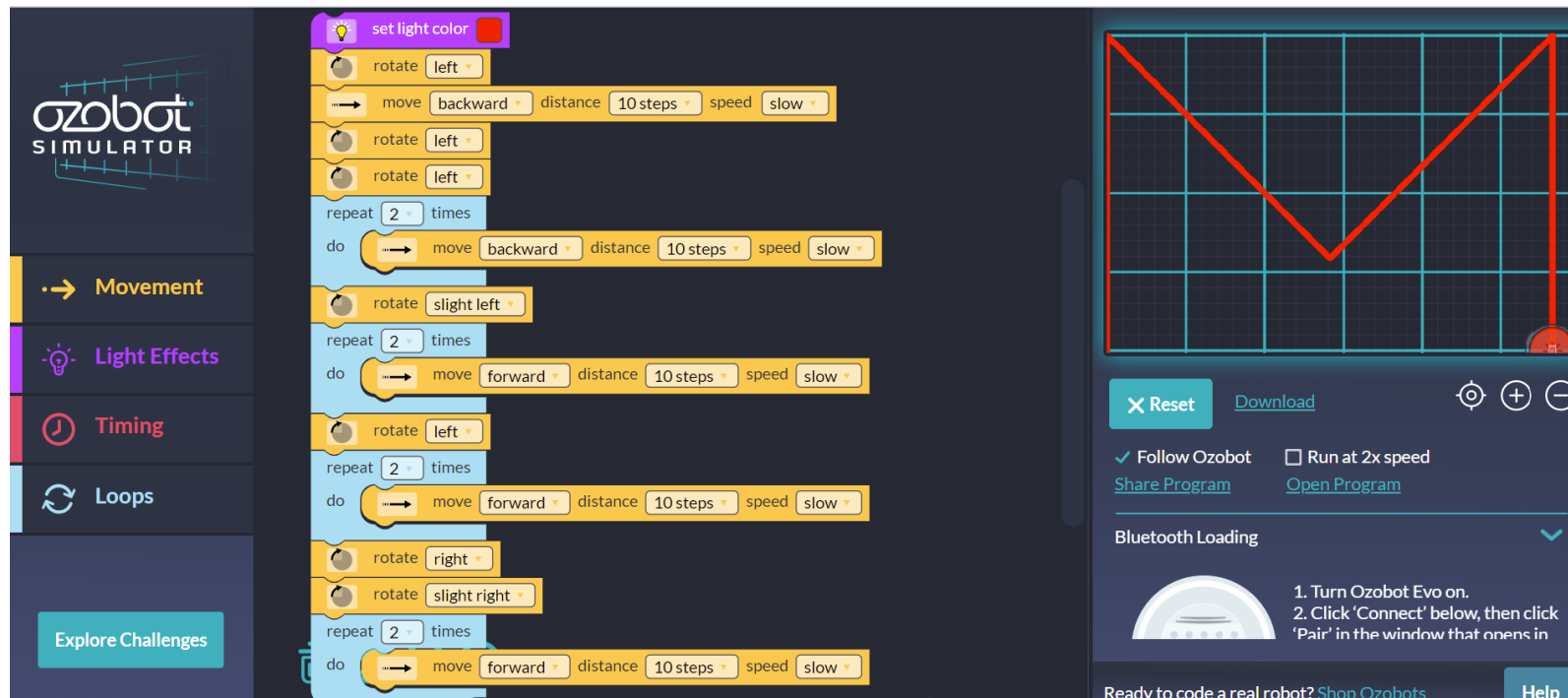
<https://classroom.ozobot.com/lessons?query=&sort=Newest&page=1>



## Practice activities

1. Coding the ozobot on simulator to write the letter M.

<https://ozobot.com/create/challenges>



The screenshot displays the Ozobot Simulator interface. On the left, a sidebar contains navigation options: Movement, Light Effects, Timing, and Loops. The main workspace shows a sequence of code blocks designed to draw the letter 'M'. The code starts with 'set light color' (red), followed by 'rotate left', 'move backward' (10 steps, slow), 'rotate left', 'rotate left', and a 'repeat 2 times' loop containing 'move backward' (10 steps, slow). This is followed by 'rotate slight left', another 'repeat 2 times' loop with 'move forward' (10 steps, slow), 'rotate left', a third 'repeat 2 times' loop with 'move forward' (10 steps, slow), 'rotate right', 'rotate slight right', and a final 'repeat 2 times' loop with 'move forward' (10 steps, slow). On the right, a grid visualization shows a red line forming the letter 'M'. Below the grid are controls for 'Reset', 'Download', 'Follow Ozobot', 'Run at 2x speed', 'Share Program', and 'Open Program'. A 'Bluetooth Loading' section provides instructions for connecting a real robot.

2. <https://games.ozoblockly.com/ozotown-basic?lang=en&level=10>