OzoBlockly™ Programming

From changing light colors to creating a square, there are many programming experiences you can discover using Ozobots™, small programmable robots that follow color-coded or pre-programmed commands. Grab your smartphone and get ready to play and program at the same time!

TEKS:

TECH K-2.1C: The student is expected to explore virtual environments, simulations, models, and programming languages to enhance learning.
TECH K-2.1D: The student is expected to create and execute steps to accomplish a task.
TECH K-2.1E: The student is expected to evaluate and modify steps to accomplish a task.
TECH K-2.6A: The student is expected to use appropriate terminology regarding basic hardware, software applications, programs, networking, virtual environments, and emerging technologies.
TECH 3-5.1A: The student is expected to create original products using a variety of resources.

Materials:

- Ozobot™ Evo – can be purchased here
- Smartphone
- Optional: computer/laptop

How To:

Setting up an Account

1. Download the *Evo by Ozobot™* app on your device.
2. Once the app has been downloaded, open the app. You must sign up for an account by clicking the orange box that says "JOIN".
3. Follow the instructions to create an account.

Coding on OzoBlockly™

1. On your web-enabled device, go to OzoBlockly™ online here.
2. Read through the basic steps of how to use OzoBlockly™ by going through Steps 1-4 in the tutorial.
3. To start coding, you should tap the word "Evo" on the left sidebar to tell OzoBlockly™ which robot you are using.
4. Select what level of programmer you are from level 1 (novice) to level 5 (advanced). This will change some of the coding options and labels for the blocks. It is best to start at level 2 for new programmers.

5. Drag and drop command blocks by selecting one of the options at the left of the screen which will open a new tab with specific commands.
6. From there, you can select the block by pressing on it and dragging and dropping the block onto the coding screen. On the coding screen, each block should click together like puzzle pieces. If you want to delete a piece of code, click and drag it to the gray trash can in the bottom right corner.
7. Once you have written your program and are ready to run it, you will need to send the code to the robot. Click on the gray person icon in the top right of the sidebar. This will open up the OzoBlockly™ account profile.
8. Log in to the account using the username and password you set up on the *Evo* app.
9. Click the next blank program number (typically #7) and name your program.

Test your Program

1. Turn on the Ozobot™ and open the *Evo* app on the phone so they can connect via Bluetooth.
2. Click on the bottom left button to open the menu of four options for Ozobot™.
3. To open the menu of all the programs saved to the OzoBlockly™ profile, click on "Play with code OzoBlockly™."
4. Select your saved program and watch as your Ozobot™ moves through your program!

Challenge #1: The Color Challenge

1. Discover how to the make the Ozobot's™ lights change colors (Hint: Look in the "Lights Effects" tab).
2. Once you have successfully figured out how to change the color of Ozobot™ lights, using code, try and make the Ozobot™ light up each of the following colors for 3 seconds and then turn off (Hint: You will need to use the "Timing" block).
    - Pink
    - Green
    - Blue
    - Orange
    - Red
    - Your favorite color
3. Once you have successfully programmed Ozobot™ to light up all six colors, try to make Ozobot™ flash each of those six colors using your programming skills.

Challenge #2: Create a Rectangle

1. Use the "Movements" tab to make Ozobot™ move.
2. Once you have successfully figured out how to move Ozobot™ around using the program blocks, code a program to make Ozobot™ complete a rectangle.
3. Once you have successfully programmed Ozobot™ to complete a rectangle, code Ozobot™ to complete a square and have the colors change as it moves along each side of the square.

STEM Explanation:

Programming has become an important part of our everyday lives. It is what makes our computers and our electronics work! It is a way for us to communicate with technological devices to tell them what to do. If we don't tell a computer (or a robot in this case) what to do, it won't do anything! In OzoBlockly™, you are able to tell a robot where to move, what to do, and when to perform different instructions. Using the *Evo* app, your Ozobot™ is able to receive your programmed instructions by connecting to your phone through Bluetooth. Bluetooth allows Ozobot™ to communicate through radio waves, rather than a wire, allowing it to receive communication from your phone or tablet a short distance away. If you move far away from Ozobot™, it won't be able to understand your commands anymore. Bluetooth is used in everyday life, like in cars to talk on the phone hands-free and in wireless headphones.

Career Connection:

Software developers create and maintain computer programs. They are the creative masterminds that give us systems to run devices and computer-related tasks. Their work results in anything from accounting software to run a business to a complex video game. Software developers specialize in either applications or systems software.

Resources:

https://ozoblockly.com/editor?lang=en&robot=bit&mode=2
https://ozobot.com/stem-education
https://storage.googleapis.com/ozobot-lesson-library/ozoblockly-mini/ozoblockly-mini.pdf