

OzoGroove Transformation Dance Lesson

Created by

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Topics

Computer Science
Programming
Mathematics

Ages

Grade 8 but can be
modified for other grades.

Duration

60-80 minutes

OzoGroove Transformations

In this activity, students will write a program that uses commands that moves Ozobot like a transformation.

Prerequisites

Students will have prior knowledge of the transformation mathematical concepts. Also an introduction presentation to the Ozobots would be beneficial.

Grouping

Independently or Small Groups of two students

Materials

- Ozobot Bit
- iPads or Android Device
- OzoGroove App needs to be installed on the device
- Reflection worksheet
- Markers
- White paper

Age/Grade Level

Middle School math - 8th grade

Duration

80 minutes

Topics

Math, Computer Science

Academic Standards

NJ Student Learning Standards for Mathematics

Geometry 8.G A. Understand congruence and similarity using physical models, transparencies, or geometry software

NJ Student Learning Standards for Technology

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge

- 8.1.8.A.1 Demonstrate knowledge of a real world problem using digital tools.
- 8.1.8.F.1 Explore a local issue, by using digital tools to collect and analyze data to identify a solution and make an informed decision.

8.2 Technology Education, Engineering, Design, and Computational Thinking – Programming

- 8.2.8.A.2 Examine a system, consider how each part relates to other parts, and discuss a part to redesign to improve the system
- 8.2.8.A.3 Investigate a malfunction in any part of a system and identify its impacts.

Overview

Students will need to have prior knowledge of transformations. Once this is completed, they can use Ozobots to replicate the movement by using the OzoGroove app on their devices. They will use the commands from the dance editor to replicate transformations to write a program. They will reflect on their observations.

Students can reflect on this activity by making connections to the math concepts, and how they can improve any technical difficulties with Ozobot and the coding process.

Lesson/Activity Plan

The learning goal for this lesson is for students to be able simulate transformations using Ozobot and the OzoGroove app.

A short introduction presentation was explained to the students on using Ozobots. Students were given all the materials and devices to complete the activity.

This activity can be completed independently or within small groups. I would recommend no more than two students per group.

During the activity, students coded the Ozobot to replicate the transformations. They used block coding in the Ozogroove app to complete the program. Afterwards, they tested the code and made changes to it if necessary. They learned a process that is seen in computer science which is test, run and debug. This simple repetitive process allowed students to comprehend that the smallest details are important for a process to be correct. Remind students to have patience, not give up and that failing is how we learn.

Click [here](#) for the complete lesson plan.

Coding Ozobot for Transformations using Ozogroove

Explore



[Ozobot 101 Presentation](#)

Your Task - Become familiar with Ozobot

- Power it on and off
- Do not remove the helmet
- Be sure it is calibrated, using the card or the app. When it is calibrated successfully it will blink **green**. If not, it will blink **red**.
- Ozocodes or static codes

Requirements:

- iPad (if applicable)
- OzoGroove App (if applicable)
- Markers
- Calibration card
- White paper

BUZZ WORD: PATIENCE

Explain

You will use programming skills to complete this assignment. When programming, you will write the code, test the code, and debug (fix) the code, and run it again. The process will continue until the program is correct, which is, making sure Ozobot moves like a transformation. If you don't get it correct on the first time, it's okay, just try it again! That's how you learn!!!

F - First
A - Attempt
I - In
L - Learning



Your Task

Your Mission: There's a new dance in town and Ozobot needs to learn it. It is called Dance Craze Transformation! You need to teach Ozobot the transformation moves so that it can learn how to dance. Your task is to write a program that uses commands that moves Ozobot like a transformation. When completed, Ozobot will be a master dancer and show off its moves! Have Fun!!!

Apply

Follow the instructions to get started:

Use your iPad to **calibrate** Ozobot.

Calibrate

- Open the OzoGroove App on the iPad
- Tap 'Ozobot Tuneup'
- Tap 'Calibrate Sensors'
- Place the robot on the center circle and follow the directions on the screen of the tablet

Tips:

- If your robot is unsuccessful, don't give up, just recalibrate, and code it again!
- Do not save your program on the iPad
- If the app is not working, power off the device, and/or clear out the app

Program #1: Write a program that has 3 moves, (commands), 1 slide, 1 rotation, 1 flip. Have the Ozobot blink a different color when the move changes. You should have 6 total blocks on your timeline to complete this task.

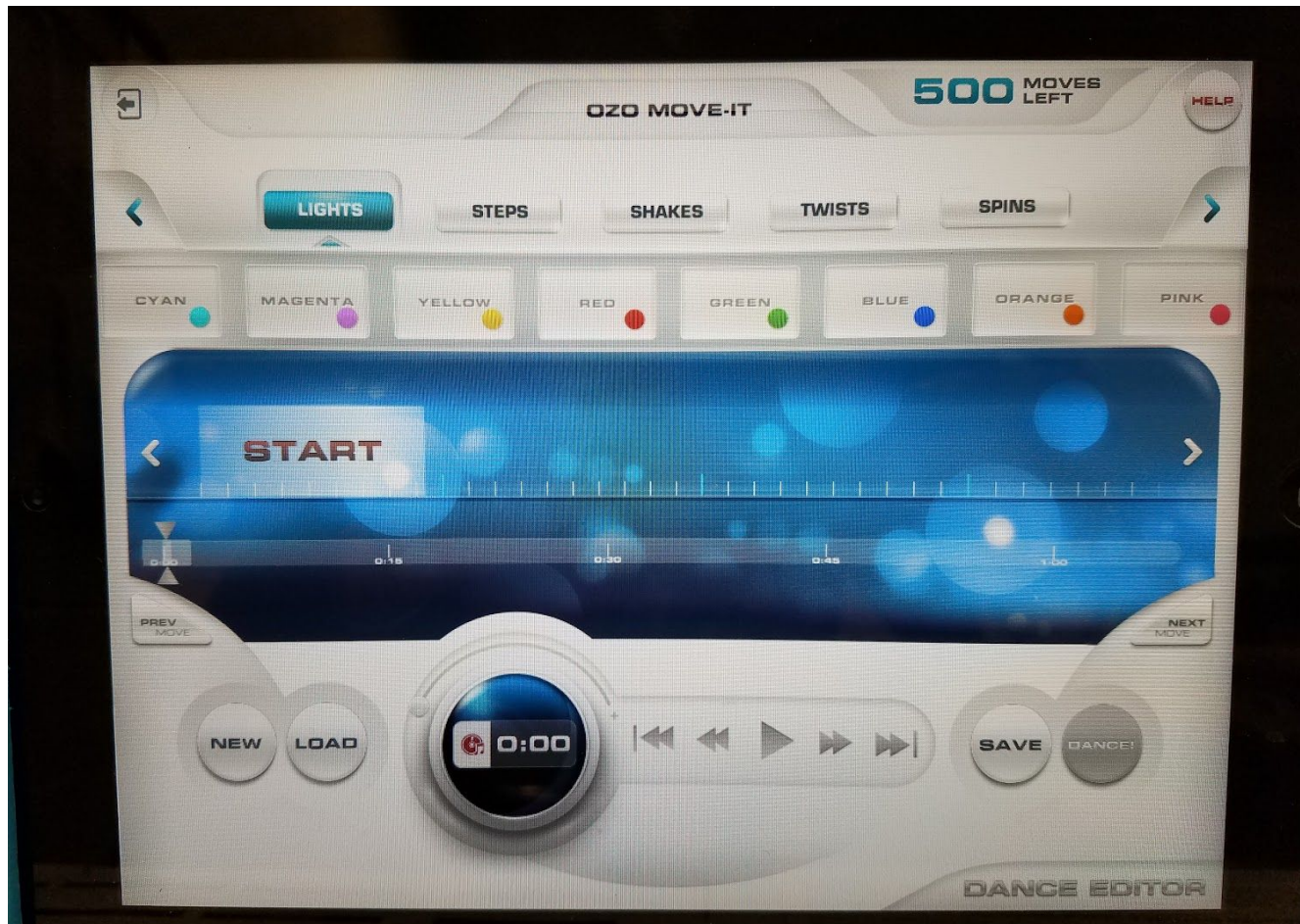
Program #2: Write a program that has 6 moves, (commands), 2 slides, 2 rotations, 2 flips. Have the Ozobot blink a different color when the move changes. You should have 9 - 12 total blocks on your timeline to complete this task.

Program #3: Create a board using the markers and paper that uses the appropriate static/ozocodes that replicates 2 slides, 2 rotations, and 2 flips. Be sure you calibrate your robot and test the code to make sure it is successful.

Your Task

Let's Write a Program

- Tap 'Dance Editor'
- **To add moves:** drag and drop onto the timeline
- **To remove moves:** drag off the timeline
- **To shift moves:** lift slightly up and drop elsewhere
- Tap 'Create a New Dance'
- Your timeline will be displayed, as shown below



Program #1:

Write the code to do the following dance moves:

- Add 1 **color** that represents rotation
- Add 1 rotation move (Spins)
- Add 1 **color** that represents a translation
- Add 1 slides move (Steps)
- Add 1 **color** that represents flips
- Add 1 flip move (Shakes)
- When completed, tap 'Dance', read the screen, tap 'OK'
- Tap one of the blue circles to activate the spot
- Turn on the robot
- Place Ozobot in the center of the blue circle, be sure the middle sensor at the bottom of the robot is in the center of the blue circle
- Tap 'Load Ozobot'

- The blue circle will blink and the robot will blink too
- Tap 'Dance' to watch your robot groove in transformation style
- Do not loop the dance on the first try

Part B:

- Tap 'Stop'
- Loop the dance
- Place the robot on the blue circle
- Tap 'Dance'

Now watch your robot dance! If your robot was successful, complete the reflection and move on. If it did not work, then try to re-write the code, reload and calibrate the robot again.

Reflection

1. What **color** did you use to represent a rotation?
2. What code did you use to represent a rotation?
3. What **color** did you use to represent a translation?
4. What code did you use to represent a translation?
5. What **color** did you use to represent a flip?
6. What code did you use to represent a flip?
7. How long was your dance? Record the time from the timeline.

Your Task

Program #2:

Write the code to do the following dance moves:

- Add 1 **color** that represents rotation
- Add 2 rotation move (Spins)
- Add 1 **color** that represents a translation
- Add 2 slides move (Steps)
- Add 1 **color** that represents flips
- Add 2 flip move (Shakes)
- When completed, tap 'Dance', read the screen, tap 'OK'

- Tap one of the blue circles to activate the spot
- Turn on the robot
- Place Ozobot in the center of the blue circle, be sure the middle sensor at the bottom of the robot is in the center of the blue circle
- Tap 'Load Ozobot'
- The blue circle will blink and the robot will blink too
- Tap 'Dance' to watch your robot groove in transformation style
- Do not loop the dance on the first try

Part B:

- Tap 'Stop'
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- Place the robot on the blue circle
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Now watch your robot dance! If your robot was successful, complete the reflection and move on. If it did not work, then try to re-write the code, reload and calibrate the robot again.

Reflection

1. What **color** did you use to represent a rotation?
2. What code did you use to represent a rotation?
3. What **color** did you use to represent a translation?
4. What code did you use to represent a translation?
5. What **color** did you use to represent a flip?
6. What code did you use to represent a flip?
7. How long was your dance? Record the time from the timeline.