OZOBOT
Envelope City

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LEARNING TO CODE WITH OZOBOTS

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Note to teacher:
Please take a look at the Ozobot teacher guide before teaching this lesson. In particular, check out how to calibrate Ozobot (p.5) and how to use codes (p.7).

Envelope City code challenge.

Created by Leanne Wagner

Working with little coders can be challenging, they are super enthusiastic but sometimes have trouble listening and need a little help focusing on the task at hand. After three lessons introducing the Ozobot robots and having fun exploring how they worked, we are ready for testing our drawing and reading code skills. This challenge was developed to keep them on track and show what they know. You can modify the task for more skilled, older students.

What students will learn
- How to read symbolic colour codes.
- How to give commands to Ozobot.
- How to direct the Ozobot robot through a cityscape.

Topics to talk about
- Robotics: line following and colour sensing.
- Physics: optics
- Computer science: visual coding

Time
1 to 2 lessons (depending on age group)

Ozobot skill level
Beginner

Materials
- Ozobot (1 per group of about three students, robots need to be calibrated on paper and charged)
- Blank white paper (A1 size or a long length of paper, 1m or more)
- Markers/textas in colours black, red, light blue and light green (recommended: Sharpie wide chisel tip or Crayola markers), one set per group.
- Set of colour code cards (printed on A5, laminated & cut out) for each group.
- Glue sticks, one per group
- Envelopes, one for colour code cards and one for each student.
- Set of colour code cards (printed on A3, laminated & cut out for display).
- Coloured markers/Textas, assorted colours, for drawing cityscape.

Colour code cards download

I made these cards for my own teaching, they are designed to be printed in a large format (A3), laminated and cut out for display/teaching purposes. Blue tack (or Velcro) them to any surface for students to view. For this activity you will need to print and prepare them in a smaller (A5) format for student use. Each group will need a set.

Inspiration…

This lesson was inspired by the fabulous, clever and creative work of Katepickle, and her blog post http://picklebums.com/make-an-envelope-city/

Codes to use…

- **Snail dose**
- **Slow**
- **Cruise**
- **Fast**
- **Go Left**
- **Go Straight**
- **Go Right**
- **Uturn**
- **End of line Uturn**
- **ZigZag**
- Spin

Let's begin…

Step one, prior knowledge

Review the previous Ozobot knowledge and skills, discuss with the class:

➢ Parts of the Ozobot.
➢ Care and handling of the Ozobots.
➢ How they read code…the sensors (their eyes).
➢ What code they can read, the colours and pattern of the code.
➢ Drawing…what we learned that works and what doesn't?
➢ Commands…what happens when? Review code cards (have teacher resource cards on display).

Step two, teach and learn

Explain the task/challenge to the class:

➢ Each group will receive a sheet of paper, an envelope with enough code cards (for two in each student envelope), and an envelope for each student.
➢ Tell students to set aside the cards while they set up their cityscape paper. Each group must glue the envelopes onto the paper in a random location, spaced apart from each other. Students need to select one envelope as the home base starting building. ***Teacher:** Demonstrate how to place and glue the envelope to form a pocket/building.
➢ Then have one student in each group place two code cards in each envelope.
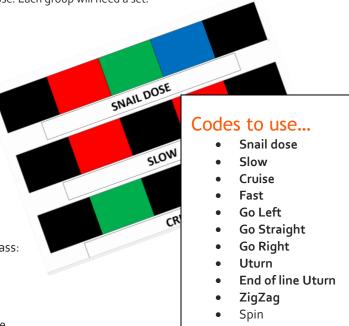➢ Then, ask a student to read to the class their home base code cards…discuss as a class:
Which codes they have? What do they think will happen when the Ozobot reads the code? How do we draw the codes on our cityscape? ***Teacher:** remind students about the width of line and code, and that direction matters. **Demonstrate** drawing a track from home base/start to next envelope building, referring to the student's code cards. For example: go slow and zigzag card.
➢ Then, challenge students to repeat the task using their code cards/envelopes. Students should work together to create roads for the Ozobots to move from one building to another (in sequence). **Rules:** They can only use the next lot of code cards once they have reached the next building.
➢ Once the roads are created have students draw/decorate their buildings and city landscape.

Step three, reflect

➢ Have show & tell time, each group demonstrates their cityscape in action.
➢ Discuss as a class: what worked and what didn't?
➢ Have students write or video about what they did, which codes they used to travel from here to there.

Extra fun…

Make a character

➢ Make a character/s to live in each building. Use light weight cardboard, attach your character to the top of the Ozobot with BlueTack. The character can now travel around the town.