

Catching Fireflies

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Grades: **1–12**

Coding Methods: **OzoBlockly**

Subjects: **Computer Science, Engineering/Tech, Math**

Robots: **Evo, Bit**

Brief Summary

Construct an attachment for Ozobot to catch fireflies for your jar, then program Ozobot with OzoBlockly to catch fireflies without running into trees!

Pre-Reader/ESL: **No**

Required Materials

- 1 Evo or Bit per group
- 1 Firefly Catching Activity Sheet (Printout) per group
- 1 Scissors per group
- 1 Pencil per group
- 1 Tape per group
- 1 Firefly Catching Supplies (printout) per group

Lesson Objectives

- Attach a firefly catcher to their bot
- Plan a route through the woods
- Use OzoBlockly to program their bot to catch the fireflies and deliver them to a jar

Preparation

Background Knowledge

(None)

Lesson Tips

- This lesson uses OzoBlockly to program the bot's movement. Students using Evo will need a tablet with Evo App (Apple Store - Google Play) installed and Bluetooth turned on (preferred) OR a computer with OzoBlockly editor open and

screen brightness set to 100%.

- Students using ozoblockly.com will need to flash load to transfer their program to their bot (Evo or Bit).
- This activity can be tailored to your students' grade and ability level with OzoBlockly's skill levels.
- To practice math skills with this lesson, have students use rulers to measure and plan their programs (cm or mm). Older students can calculate the best angles for their bots to turn.

Direct Instruction (Teacher Facing Instructions):

- 1 Introduce the activity: Today you will use your firefly catching supplies to construct an attachment for Ozobot to “catch” fireflies for your jar without running into any trees!
- 2 Instruct students to cut out their Firefly Catching supplies and fold according to the instructions. They may also cut out the ruler to help with program planning, if desired.
- 3 Instruct students to tape Ozobot's firefly catcher to the bot and place the fireflies on the firefly spots on the activity sheet.
- 4 Explain to students: It's helpful to plan your programs before coding on your device.
 - How far will your bot have to travel before it turns?
 - What direction does your bot need to turn?

Students can use the ruler to plan their program. One "step" in OzoBlockly's Movement blocks = approximately 1cm. If students are using upper OzoBlockly Skill Levels, they can program their bots movement by telling it how many millimeters to travel.

- 5 Once students have planned their program, they can build and test it in OzoBlockly. To program where the bot travels and which way it turns, students will be using the Movement block category in OzoBlockly. Students can go back and debug until they are successful.

Lesson Closure (Optional)

Ask:

- How many fireflies did you catch for your jar?
- What was the hardest part of this activity?
- What was the easiest part of this activity?

Student Practice (Student Facing Instructions):

- 1 Today you will use your firefly catching supplies to construct an attachment for Ozobot to “catch” fireflies for your jar without running into any trees!
- 2 Cut out your Firefly Catching supplies and fold them according to the instructions. You may also cut out the ruler to help you plan your program.
- 3 Tape Ozobot's firefly catcher to your bot and place the fireflies on the firefly spots on the activity sheet.
- 4 It's helpful to plan your program before coding on your device.
 - How far will your bot have to travel before it turns?
 - What direction does your bot need to turn?

It may be helpful to use your ruler. One "step" in OzoBlockly's Movement blocks = approximately 1cm. You can also program Ozobot's movement in upper OzoBlockly Skill Levels, by telling it how many millimeters to travel.

- 5 Once you have planned their program, build and test it in OzoBlockly. To program where Ozobot travels and turns, you'll use blocks from the Movement category. If you test it and it doesn't work how you expected, that's okay! You can go back and debug.

Supplements

Additional Attachments

- [Firefly catching supplies.pdf](#)
- [Firefly-Catching-Map.pdf](#)
- <https://www.youtube.com/watch?v=uoLLGbrYK88&feature=youtu.be>

Academic Standards

- CSTA.1A-AP-08
- CSTA.1A-AP-11
- ISTE.4.c
- ISTE.4.d
- NGSS.1-ETS1-2
- NGSS.2-ETS1-1
- CCSS.MATH.CONTENT.4.MD.A.2
- CCSS.MATH.CONTENT.2.MD.A.1