

Ozobots and the Four Seasons	Grade 1: Daily and Seasonal Changes
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Lesson Plan	Coding Tool	Ozobot
	Cross-curricular	
<p><b>Big Ideas</b></p> <p>Changes occur in daily and seasonal cycles.</p> <p><b>Overall Expectations:</b></p> <p>1. assess the impact of daily and seasonal changes on living things, including humans.</p> <p>3. demonstrate an understanding of what daily and seasonal changes are and of how these changes affect living things.</p>	<p><b>Specific Expectations</b></p> <p>1.2 assess ways in which daily and seasonal changes have an impact on society and the environment</p> <p>3.1 identify the sun as Earth’s principal source of heat and light</p> <p>3.2 define a cycle as a circular sequence of events</p> <p>3.4 describe and compare the four seasons</p> <p>3.5 describe changes in the appearance or behaviour of living things that are adaptations to seasonal changes</p>	
<p><b>Description</b></p> <p>This science coding lesson will give students the opportunity to demonstrate their understanding of the four seasons cycle, while exploring the Ozobot and it’s capabilities.</p>		
<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>-Ozobot(s)</li> <li>-Markers (At least ½ cm thick)</li> <li>-White Paper</li> <li>-Ozobot coding stickers or white label stickers</li> </ul> <p>Note: In order to save time during the lesson, calibrate the Ozobots before. Instructions on calibration can be found here:</p> <p><a href="https://files.ozobot.com/stem-education/ozobot-calibration-tips.pdf">https://files.ozobot.com/stem-education/ozobot-calibration-tips.pdf</a></p>	<p><b>Computational Thinking Skills</b></p> <p>Algorithm Design</p>	

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## Introduction

Activate prior knowledge by discussing any previous lessons or activities completed regarding seasonal changes and the sun's effect.

Introduce the Ozobot to the students and highlight some key features about them. Talk about how they read codes that we create using markers or coding programs. Demonstrate how the Ozobot follows a path that you create.

**Suggestion:** Introduce Ozobots to the group in a prior lesson if possible, to reduce the learning curve that students might experience in their first interactions with the Ozobots. Sample introductory lessons can be found on the Ozobot website.

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## Action

Students will use their prior knowledge and communicate their understanding of the differences between the four seasons.

1. Students/Groups will divide their paper into four parts using an x or + connecting in the middle of the page. Label each section clockwise with the names of the seasons in their order. Ensure that each season is next to the seasons that come before and after it.
  2. Create a sun in the middle of the page and discuss the sun being the source for light and warmth on Earth.
  3. Each section can then be filled in with words, symbols, pictures, etc. to show the characteristics of that season. Encourage students to include aspects that have been previously covered such as amount of daylight, type of precipitation, temperature, activities, etc.
  4. When all four seasons are completed, students can carefully draw a path around or through all of the seasons and the sun using a black marker. This path will represent the Earth's cycle through the seasons as well as its revolution around the sun. Ensure the path is at least 60 mm wide at all times to avoid an error and that the path is connected in a circle.
  5. Start the Ozobot on the path so the seasons are visited in the correct order. As the Ozobot moves, the group can discuss the repeating cycle, the changes from season to season and the rotation around the sun. (If done individually, have student's pair up and discuss with their partner.)
  6. Students can then add coding stickers to their paths. Remind students that as they place the stickers on the path, they are creating the code for the Ozobot to read. Students can use the different codes to have their Ozobots do different things along the path.  
*Suggestions:* Use the spin move to symbolize the Earth's rotation on its axis, turn left or right towards the Sun and use a U-turn code to prevent it from reaching the Sun. Encourage creativity and let the students ultimately choose their codes.
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## Consolidation/Extension

**Gallery Walk:** As all of the bots move along the trail, students can walk around the room and observe other groups' work. Notice any similarities and differences between your trail and characteristics and that of other groups.

**Discussion:** As a class, discuss what was observed about the seasons or Ozobots while working or on the gallery walk. Potential discussion questions include:

- What did you notice about the paths that the Ozobots went on? Was there a beginning or an end?
- After the Ozobot went around the paper once, what did it do? Why did it continue on the path? What could you do to make it stop?
- How were you able to change the colour of the Ozobot's light? Which parts of the season did the colours represent?
- What are some changes that take place as the seasons change?

## Extensions:

**Light Show:** Instead of using a black marker to draw the path for the Ozobot, students can choose different colours that represent each season. The lights on the Ozobot will change colour depending on the colour of the path. Winter could be a blue path to represent the ice and snow, while fall could be orange or red for the changing colours of the leaves. Allow the students the choice and encourage them to explain the reasoning for their choices.

(Note: a black path will display a blue light)

**Cool Move Coding:** Make the ozobot perform a "cool move" for each season. Try the *Winter Moonwalk*, *Fall Twister* or come up with your own! Name your "cool move" in relation to the season and explain why it fits that season.

**Suggestion:** Make your own coding stickers using markers and white label stickers. Remember to use black marker before and after your code or the Ozobot will not read it correctly.

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## Assessment

Students will be discussing the difference and similarities between the four seasons as they create their visual representations. They can then be asked specific questions during the consolidation to assess understanding and reasoning. Groups will hand in their paper at the end of the lesson and they can be used to check for understanding of basic concepts as outlined in the specific expectations.

## Additional Resources

General Ozobot info: [www.ozobot.com](http://www.ozobot.com)

Calibration Instructions: <https://files.ozobot.com/stem-education/ozobot-calibration-tips.pdf>

Code Stickers: <https://shop.ozobot.com/products/code-stickers>

or

Ozobot Code Sheets (for DIY stickers): <https://play.ozobot.com/print/guides/ozobot-ozocodes-reference.pdf>

See example below of what students may create.

