

# OZOBOT



In the classroom  
Grades K-12

Group Size	Group size can vary, but 2 students per Ozobot is recommended.
Duration	Determined by activity selected.
Materials/ Equipment	Educator Tools and Curriculum guide, Evo classroom kit including: 18 Evos in storage box, 18 packages of markers, 3 multi-port charging stations, 18 usb cords, 18 clear DIY skins, white paper, foam shaped pillars (used for Evo's self driving lesson), Bot Camp for Educators (teacher training)  Materials and worksheets will vary depending on the activity the teacher selects.
Resources	<p>Ozobot Educator's Guide:  <a href="https://files.ozobot.com/stem-education/ozobot-educators-guide.pdf">https://files.ozobot.com/stem-education/ozobot-educators-guide.pdf</a></p> <p>Three quick, self-guided courses to take you from student to teacher, visit:  <a href="https://www.ozobot.com/botcamp">ozo.bot/botcamp</a></p> <p>Helpful demos on how to use Evo, visit: <a href="https://www.ozobot.com/trainingvideos">ozo.bot/trainingvideos</a></p> <p>Bot Basics – Get to Know your Robots  <a href="https://files.ozobot.com/stem-education/educator-botcamp.pdf">https://files.ozobot.com/stem-education/educator-botcamp.pdf</a></p> <p>K-12+ Curriculum Guide, visit: <a href="https://www.ozobot.com/curriculum-guide">ozo.bot/curriculum-guide</a></p> <p>Ozobot Lesson Library: <a href="https://www.ozobot.com/lessons">ozo.bot/lessons</a></p> <p>Color Codes Reference Sheet:  <a href="https://www.ozobot.com/colorcodesref">ozo.bot/colorcodesref</a></p> <p>Color Code Tips:  <a href="https://www.ozobot.com/colorcodetips">ozo.bot/colorcodetips</a></p> <p>Color codes basic training for students:  <a href="https://portal.ozobot.com/lessons/compilation/color-codes-basic-training">https://portal.ozobot.com/lessons/compilation/color-codes-basic-training</a></p> <p>Ozobot Basic training Lesson 1  <a href="https://storage.googleapis.com/ozobot-lesson-library/basic-training-1/ozobot-basic-training-1.pdf">https://storage.googleapis.com/ozobot-lesson-library/basic-training-1/ozobot-basic-training-1.pdf</a></p> <p>Calibrate the Evo instructions found at: <a href="https://www.ozobot.com/educalibrate">ozo.bot/educalibrate</a> and  <a href="https://www.ozobot.com/support/calibration">https://www.ozobot.com/support/calibration</a></p> <p>Speak to an Ozobot Edu Consultant <a href="mailto:ozoedu@ozobot.com">ozoedu@ozobot.com</a></p> <p>Evo How To: The App <a href="https://www.youtube.com/watch?v=EW3cG8Epuoc">https://www.youtube.com/watch?v=EW3cG8Epuoc</a></p> <p>Student Certificate (not required) <a href="https://www.ozobot.com/certificate">ozo.bot/certificate</a></p>
Objective	The objective and standards will vary depending on the activity selected. Students will use Ozobot Evo (which is a miniature robot) to learn coding concepts like cause/effect, critical thinking, and debugging.
Preparation	<p>The bots that are included in this activity are the Ozobot Evo. In this activity plan, the terms bot, Ozobot, and Evo all refer to the Ozobot Evo in the kit. Select a lesson or activity from the Ozobot Lesson Library or Curriculum Guide. Over 150 lessons are available in the lesson library <a href="https://www.ozobot.com/lessons">ozo.bot/lessons</a> or search using the lesson filter <a href="https://www.ozobot.com/lessons-filter">ozo.bot/lessons-filter</a>. There are also easy to use color codes basic training worksheets for students located at:  <a href="https://portal.ozobot.com/lessons/compilation/color-codes-basic-training">https://portal.ozobot.com/lessons/compilation/color-codes-basic-training</a></p> <p>Before class, get to know your bot by visiting  <a href="https://files.ozobot.com/stem-education/educator-botcamp.pdf">https://files.ozobot.com/stem-education/educator-botcamp.pdf</a></p>

	<p>Here, you will become familiar with the power button and charging location, get apps, and learn how to code. Bot Basics is a very helpful resource. In about 15 minutes, you can complete the Bot camp which is recommended before using these in your classroom. Bot camp will explain calibration, drawing lines, exploring colors, color codes, and direction codes. This is a helpful guide anytime you have questions regarding your bot.</p> <p>Before class, make sure the bots are fully charged (charge time is 40-60 minutes). Note, if the Ozobot starts acting odd, use the black calibrate circle to calibrate your bot. When in doubt, calibrate. To calibrate, hold down the power button on the Evo for 2 seconds until the LED light turns white. Place the Evo in the middle of the black dot. The Evo will then blink green. When it blinks green it means that it has successfully calibrated. If it blinks red, start calibration process over.</p> <p>Gather supplies. Print any handouts that will be used. Any marker can be used, it is just the thickness of the line that is important (&gt; 1/4" thick lines). If using markers other than the provided Ozobot markers, it is best to use washable markers (not sharpies as they can stain clothing or tables).</p> <p>Locate the following classroom handouts and review with students so that they get to know their Evo:</p> <ul style="list-style-type: none"> <li>• Color Code Tips: Draw Color Codes and calibration: <a href="https://www.ozobot.com/colorcodetips">ozo.bot/colorcodetips</a></li> <li>• Color Code Reference Sheet: <a href="https://www.ozobot.com/colorcodesref">ozo.bot/colorcodesref</a></li> <li>• The Ozobot Basic Training Lesson 1 provides some quick activities for students of all ages: <a href="https://storage.googleapis.com/ozobot-lesson-library/basic-training-1/ozobot-basic-training-1.pdf">https://storage.googleapis.com/ozobot-lesson-library/basic-training-1/ozobot-basic-training-1.pdf</a></li> </ul> <p>Optional - Print student Certificate (not required): <a href="https://www.ozobot.com/certificate">ozo.bot/certificate</a></p>
<p>Procedure</p>	<p>The procedure will vary depending on the activity selected.</p> <p>An Ozobot is a miniature robot, the smallest of its kind, and there are a lot of things Ozobot can do:</p> <ol style="list-style-type: none"> <li>1. Ozobot drives on lines – You can draw a line and place Ozobot on it and it will follow the line. This is a great activity for younger students. For example, they could write their name and watch the Ozobot follow the name. To view the activity for this please visit <a href="https://storage.googleapis.com/ozobot-lesson-library/write-your-name/write-your-name.pdf">https://storage.googleapis.com/ozobot-lesson-library/write-your-name/write-your-name.pdf</a></li> <li>2. Another simple activity is to give students a blank piece of paper with the markers to try out some of the codes. For a pdf of the codes visit <a href="https://files.ozobot.com/stem-education/ozobot-color-codes.pdf">https://files.ozobot.com/stem-education/ozobot-color-codes.pdf</a></li> </ol> <p>How does the Ozobot work?</p> <p>Turn over the Ozobot to see what is underneath. On the bottom, you can see 5 openings with lights shining out of them. An optical sensor lives in each of these openings. These sensors are Ozobot's eyes. Each of the sensors sees how bright the paper underneath is. This way, Ozobot can see where the white and where the black parts are and therefore knows where the line is. The middle sensor is a color sensor that can detect red, green, and blue colors. You can give commands to Ozobot by using colors. See the color code worksheet for some codes that Ozobot can understand.</p> <p>Bots will last for 60-90 minutes between charging and take 40-60 minutes to fully charge. Please plan accordingly.</p> <p>Ozobot Troubleshooting:</p> <p>If you are having any trouble with the Ozobot:</p> <ol style="list-style-type: none"> <li>1. Check to see if the bot is fully charged. If the Ozobot blinks red, the battery needs charged very soon. When the battery is almost charged fully, Ozobot starts blinking green. Ozobot shows a solid green light when the battery is fully charged.</li> <li>2. Calibrate the Ozobot- calibration instructions can be found behind classroom handouts tab or online at: <a href="https://files.ozobot.com/stem-education/ozobot-calibration-tips.pdf">https://files.ozobot.com/stem-education/ozobot-calibration-tips.pdf</a></li> </ol> <p>It is helpful to calibrate each time you start using Ozobot or when the location or</p>

	<p>type of paper is changed. To Calibrate, hold down the power button on Ozobot for 2 seconds until the LED light turns white. Place Ozobot in the middle of the black dot. Ozobot will then blink blue, move forward, and then blink green. When it blinks green it means that it has successfully calibrated. If it blinks red, start the calibration process over.</p> <ol style="list-style-type: none"> <li>3. Sometimes calibration will not be enough and the wheels may need to be cleaned as the smallest piece of dust can get into the drivetrain. To clean the wheels, take a clean white sheet of paper and move Ozobot's wheels gently back and forth on the paper. The wheels are now clean.</li> <li>4. Have Evo updated and set them to Classroom Mode <a href="https://ozo.bot/evo-classroom-setup">ozo.bot/evo-classroom-setup</a></li> </ol> <p>Storage: While not in use, Ozobots should be placed in their carrying case or container. This container should be stored out of sunlight in a cool, dark place. When Ozobot is stored for long periods of time, leave the battery at medium charge, since high or low charge can hurt the battery.</p> <p>To reach customer support, contact 844-469-6268</p> <p>At the conclusion of the activity, inventory all materials and place back inside the kit. Materials should be returned on time and in good condition.</p>
Potential Questions	<p>Potential questions will vary depending on the activity selected. Some questions that can be used for any of the activities selected are: How do you think the robots work? Do you have a robot at home that you use? (for example a Roomba). If you could build and design any robot, what would it be? What do the colors represent? What challenges did you face when using the Ozobots and how did you overcome these challenges? How do you think robots in the future will be different from robots today?</p>
Air Force Connection	<p>The Air Force employs countless computers to accomplish each mission. But a computer is only as good as its software, which is where Computer Systems Programming specialists come in. These experts write, analyze, design and develop programs that are critical to Air Force war-fighting capabilities. From maintenance tracking programs to programs that organize and display intelligence data, they ensure we have the software and programs needed to complete our missions efficiently and effectively.</p> <p><a href="https://www.airforce.com/careers/detail/computer-systems-programming">https://www.airforce.com/careers/detail/computer-systems-programming</a></p>