Earth's tmosphere





Our Blue Marble: Earth's Atmosphere

Objective: Students will observe and measure gas levels in the Earth's atmosphere.

Materials Needed:

- ✓ 1 oxygen sensor
- ✓ 2 tablets
- ✓ 1 carbon dioxide sensor
- ✓ 1 dry erase board
- ✓ 1 dry erase board marker
- ✓ 1 dry erase board eraser
- ✓ Earth Now app <u>Download in the Google Play store</u>.

Summary of Student Action:

Students will use an oxygen sensor and a carbon dioxide sensor to measure the levels of these gases in the air around them. Students will also explore other characteristics of the Earth using the *Earth Now* app.

Setup Instructions:

- For the Oxygen Sensor:
 - Download the Science Journal App
 - o Download the Graphical Analysis 4 App
 - Follow the instructions to calibrate the oxygen sensor
 - \circ $\;$ Set out the oxygen sensor $\;$
- Set out the carbon dioxide sensor
- Download the Earth Now app

Additional Notes:

- Experiment with both the oxygen sensor and carbon dioxide sensor in advance to calibrate and test the devices.
- Inform students to be extremely careful when using the sensors.



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Activate Your Knowledge:

What surrounds our Earth? There is layer of gases that surround our Earth. This layer is called the Earth's atmosphere. The Earth's atmosphere is held in place by gravity. This thin layer of gas around the Earth is what helps make Earth a good place for living organisms. The atmosphere helps keep the Earth's temperature stable, protects the surface of the Earth from debris in space, and provides us with the air we breathe. Use the provided sensors to measure just two of the many gases that are part of our atmosphere!

Materials You Will Need:

- ✓ 1 tablet paired to the oxygen and carbon dioxide sensors
- ✓ 1 tablet with the downloaded Earth Now app
- ✓ 1 dry erase board
- ✓ 1 dry erase board marker
- ✓ 1 dry erase board eraser

Procedures:

Use the dry erase board to write down your observations and answers to the questions. You can also use the dry erase board to write down any notes or pieces of data you find interesting.

- 1. Predict what percentage of the air you breathe is oxygen. Write your prediction down on the dry erase board.
- 2. Position the oxygen sensor probe in the air around you. Using the tablet interface, measure the percentage of oxygen in the air. Write your answer down on the dry erase board next to your prediction. How does your prediction compare to your results? Did the answer surprise you?
- 3. Predict what percentage of the air you breathe is carbon dioxide. Write your prediction down on the dry erase board.
- 4. Using the carbon dioxide detector, measure the amount of carbon dioxide in the air. Write your answer down on the dry erase board next to your prediction. How does your prediction compare to your results? Did the answer surprise you?
- 5. Open the Earth Now app on the tablet. Check the carbon dioxide vital signs for your location. How does this compare with the value you found for the level of carbon dioxide? Are the values similar or different? Why do you think that is?



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