# Atmospheric Composition

## Lesson Overview

During this lesson, students will view several pictures of Mars including pictures taken by the Mars rover. The students will make guesses about what planet is pictured in front of them. Students will compare the mystery planet's atmosphere to the atmosphere of Earth.

## Standards Addressed

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| SC 2005 | 6-4.1 Compare the composition and structure of Earth's atmospheric layers (including the gases and differences in temperature and pressure within the layers). |
| SC 2014 | 6.E.2A.1 Develop and use models to exemplify the properties of the atmosphere (including the gases, temperature and pressure differences, and altitude changes) and the relative scale in relation to the size of Earth |
| CCSS ELA | RST 6-8.1 Cite specific textual evidence to support analysis of science and technical texts. |
| NGSS | MS-ESS2-6 Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates. |

## Disciplinary Literacy Best Practices

Highlighting
Venn diagram

## Lesson Plan

Time Required – One 60-minute Class Period

Disciplinary Vocabulary: Atmosphere and various gases including: Nitrogen, Oxygen, Ozone, Water Vapor, Carbon Dioxide, Argon

Materials Needed:

- Various Google images of Mars and the Mars Rover (engage)
- Mars article (informational text): http://www.space.com/16903-mars-atmosphere-climate-weather.html
- Highlighters and colored pencils
- Construction Paper-for pie chart (Graphic Organizer)
- Venn diagram handout
- ”Microphones” (This is a group norm I established with my students so that the person who has the toy microphone has the “floor”)

Assessment: Completed Venn Diagram and Pie Graph of Mars’ atmosphere

## Engage

- The teacher will show students the pictures of Mars' atmosphere on the smart board without telling them whose atmosphere it is. The students will make guesses about what planet is pictured. The teacher will reveal that the pictures are of Mars and its atmosphere. She will explain that we will be comparing Mars' atmosphere to Earth's.
- The students will ask themselves how the planet upon initial observation already looks similar and different to that of Earth's.
- Some students may already be thinking more specifically by asking themselves about the specific composition of Mars' atmospheres...ex: I wonder if Mars has as much nitrogen as Earth?

## Explore

- The students will be working in partner groups to read an insightful article about Mars. They will using a decoding key pre-established by the teacher to decode and highlight the article. As the students read in partners, they will underline in a blue colored pencil similarities between Earth and Mars's atmosphere. They will underline differences in red. They will also use a highlighter to highlight interesting facts that would be worth sharing with the rest of the class.
- After students highlight, they will independently condense their information into a Venn diagram to compare the two atmospheres. Then the students will use all of this information to work with a larger to group to create a pie graph of Mars' atmosphere using the quantitative data from the article.
- Ask questions such as:
    - How does the composition of Earth’s atmosphere compare to Mars’ atmosphere?

## Explain

- As the students work with their partners and highlight the article, they will be asking each other to explain and justify their reasoning for similarities and differences. For evidence/justification, the students may use their textbook or the pie graph they made on Earth's atmosphere to support whether they think something would qualify as a similarity or a difference.

## Extend

- On their own, the students will condense all the information they gathered from their article and put it into a Venn diagram format.
- The students will then work collaboratively in larger groups where they will again use all the information gathered from the article to create a pie graph of Mars' atmosphere.
- Students will not be introduced to new vocabulary in this lesson as it is an extension of a lesson they already have had. However the students will be reviewing the gases that make up Earth's atmosphere and the terms qualitative and quantitative.
- In future activities such as in studying about the greenhouse effect or plant processes, the students will refer back to this lesson and be able to discuss why Earth's atmospheric composition is so vital to life on earth.

## Teacher Reflections and Biographical Information

Although the students performed very well in this lesson, in the future, I may be more intentional about partner grouping. Also a few students had some difficulty determining from their reading which were differences, which were similarities, and which were extraneous but interesting facts about Mars. I think in the future I may guide them through a paragraph and demonstrate how I would like them to highlight/decode.

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