

Atmospheric Layers

Lesson Overview

In this lesson, students will compare the composition and structure of the Earth's atmospheric layers, including the gases and differences in temperature and pressure within the layers. They will construct a foldable to organize their learning.

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. |
| 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

Notebooking (Foldables)
Line of Learning
Paint the Picture
Card Sort
Bounce Cards
Exit Ticket

Lesson Plan

Time Required: Two 55-minute Class Periods

Disciplinary Vocabulary: troposphere, stratosphere, mesosphere, thermosphere, exosphere

Materials Needed:

- Colored Paper (3 sheets per student)
- Resources for Research on the Atmospheric Layers
- Wall Chart of Earth's Atmosphere
- Colored Pencils
- Post-It Notes

Assessment: Completed Foldable, Exit Ticket

Engage

- Students will use the strategy “Paint the Picture” to demonstrate their current knowledge of the atmosphere. Each student will draw a picture of what they think the atmosphere is like.
- Students will pair with their elbow partner and share their illustration with each other. They should identify commonalities in their drawings. Students may wish to add ideas to their drawings based on their learning from their partners.
- Students will dialogue about ideas related to the atmosphere and teacher will scribe student ideas on a chart.

Explore

- Students will construct a step book foldable of the Earth’s atmospheric layers.
 - Each student will need 3 sheets of colored paper.
 - Students will hold the three sheets of paper together so that each piece of paper is about 1.5 inches lower than the one before it. This creates the first three “steps”. Next, fold each paper down on the opposite side of the “steps” to create three more steps. Staple at the top fold. The final book should look like:



- On the top step, students should write “Earth’s Atmosphere” and list the five layers of the atmosphere on the other five steps. Bottom to Top: troposphere, stratosphere, mesosphere, thermosphere, exosphere
- Students will research each of the layers of the atmosphere and add characteristics of each layer to the appropriate “step”.
 - Characteristics to Consider: composition, structure, properties such as temperature, pressure, special characteristics

Explain

- After students have completed their individual research about the layers of the atmosphere, the class will create a combined wall chart using Card Sort of information about the Earth's atmosphere.
- The teacher will prepare cards with the names of the layers of the Earth's and characteristics of each layer. Cards should be shuffled and randomly divided among student groups.
 - Information/Terms for Cards:
 - Troposphere
 - Stratosphere
 - Mesosphere
 - Thermosphere
 - Exosphere
 - Ozone
 - airplanes
 - Nitrogen and oxygen
 - Water vapor and carbon dioxide
 - Temperature
 - Air pressure
 - Altitude
 - Meteors
 - Space station and space shuttle
 - Weather balloons
- Student groups will discuss the information on their cards and use the information from their research to identify the appropriate place for their cards on the class wall chart. Student groups should use Bounce Cards to support their dialogue during this portion of the lesson.
- As students place the cards on the chart, they will explain to the class why they chose the placement.
- Key Question:
 - How do the layers of the atmosphere compare in composition, structure, and properties?
- After completion of the class chart, students will return to their illustration of the Earth's atmosphere from the beginning and add new information from the lesson with colored pencils (Line of Learning.)
- Exit Ticket: List the layers of the atmosphere and write something you know about each layer.

Teacher Reflections and Biographical Information

This lesson was taken from the SC Standards Support System (S3) Curriculum. As teachers in the IQ-MS project, we adapted it by supplementing it with additional disciplinary literacy strategies to support student understanding of the content.

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