

EARTH'S SPHERES & INTERACTIONS PROJECT

“Everything is connected to everything else.”

Standards:

5-ESS2-1-I can....develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.

5-ESS3-1 I can....obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

Earth is often referred to as a system; a complex whole that is produced by various interacting parts. These parts, which you have learned as spheres, interact in very dynamic ways to produce everyday life as well as natural disasters.

Guiding Questions: What are the guiding questions for this lesson?

1. What is a system?
2. What are the Earth's systems?
3. What are the Earth's spheres and how do the spheres interact?
4. What can humans do to diminish their impact on the hydrosphere, atmosphere, geosphere, and the biosphere?

In this project, you will each be assigned a sphere and demonstrate your understanding of each sphere, how it interacts with other spheres, and how Earth represents a system. You will choose a scenario such as presented in class to complete this task. This scenario should include a specific habitat or biome, people/person, animals, plants, water, rock/soil etc. Be creative in your modeling and demonstrating their interactions.

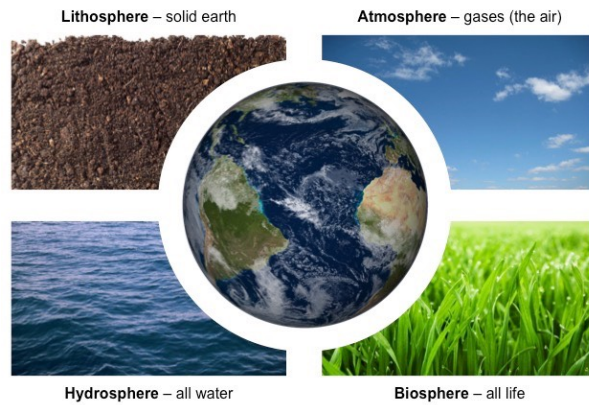
The spheres that will be included in your project are:

Atmosphere

Geosphere

Hydrosphere

Biosphere



Assignment: Complete the following in connection to your 3D spheres model in parts two and three.

- 1. Each member of your group will be assigned a sphere and together your group will create a project that illustrates the spheres and at least 3 interactions between them.**
- 2. Label each sphere.**
- 3. Clearly and accurately describe each of systems- what your sphere is made of, what exists in your sphere i.e. animals, plants, etc, how your sphere interacts with the other three spheres, and any other information you think is important.**
- 4. List at least three ways humans can diminish their impact on your sphere.**
- 5. As a group, each member will deliver an oral presentation on their assigned system.**
- 6. Cite all resources (books, websites, where you got all information and pictures) in MLA format**

Part 2 Task : Modeling Earth's Interactions (15 points)

With your group you will develop a 3D model demonstrating Earth's four spheres and how they interact using the biome/ scenario you chose.

Include the following in your presentation:

1. The four spheres (atmosphere, biosphere, hydrosphere and geosphere).
2. Illustrate how each sphere interacts with the other-for a total of three. For example, if you chose a horse (biosphere) drinking from the water (hydrosphere) you would need to label those items with their sphere and use arrows to represent their relationship/ interaction.
3. Use arrows to show or demonstrate the interactions in your scenario/model.

Part 3 Task: Tech Integration (15 points)

As your group completes their research and creates their model. You will use the "Explain a Process" Keynote template to explain, illustrate, and animate how the spheres interact. Your teacher will send you the template for this.

Include the following in your Keynote animation:

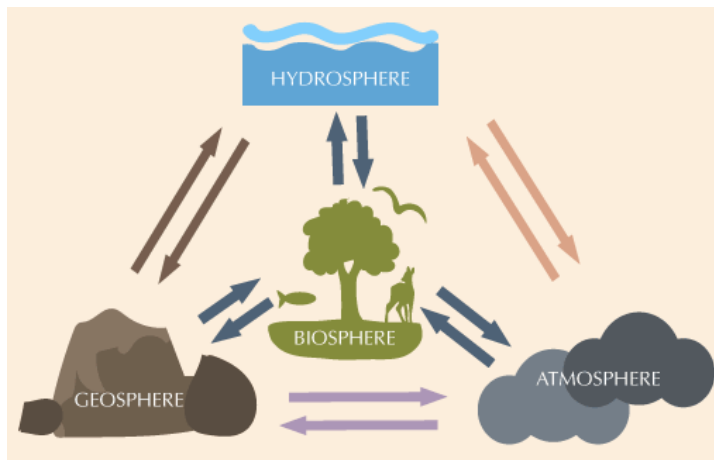
- The four spheres (atmosphere, biosphere, hydrosphere and geosphere).
- Illustrate how each sphere interacts with the other. For example, if you chose a horse (biosphere) drinking from the water (hydrosphere) you would need to label those items with their sphere and use arrows to represent their relationship/interaction.
- Record audio explaining their interactions and be **specific** in your explanations. Think about the pictures we discussed as a class with plants, rocks, animals (jaguar) and the atmosphere/gases around them (mostly invisible) and how they each had different interactions.
- Animate your arrows (interactions), water in the hydrosphere, moving clouds for the atmosphere, animals, plant life or people

moving in the biosphere. Make sure your images connect back to/align with your recording.

The image below gives you a simple example of the four spheres with arrows indicating their interactions:

Example of a model:

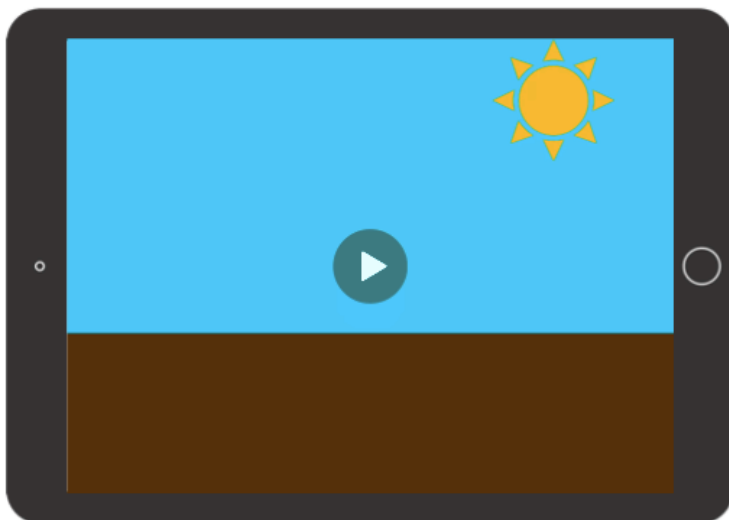
The image below gives you a simple example of the four spheres with arrows indicating their interactions:



EXPLAIN A PROCESS



Explain a Process gives students the chance to create and explain an animated process from scratch or provide your students with an animated process template and have them record audio to orally explain how the process works.



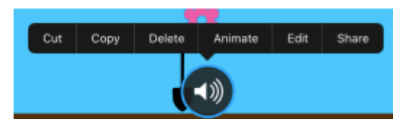
Let's Make It!

1. Create a scene using shapes or upload an image into Keynote and share to your class (Bonus: animate your objects!)
2. Students will select + and choose "Record Audio"
3. Students will explain how the process works.

Select the audio recording and choose "Animate"

Choose "Build Order" and put the audio recording first

Export completed recording as a movie



Explain a Process Template

Part 4: Presentation (10 points)

Present both model and interactions to the class to show comprehension of Earth's Spheres. We will review the rubric and what to expect for presentation day.

Project Total: 50 Points Standards Based Rubric-Use this as your guide

SCORE	1	2	3	4
COVERAGE OF THE TOPIC	Information on the model does not accurately describe the spheres-little to no information is present.	Information on the model somewhat describes the spheres-some information is present.	Information on the model describes the spheres-most information is present.	Information on the model thoroughly describes the spheres-all information is present.
LAYOUT AND DESIGN	The model/poster is somewhat distracting and neatness is not evident. No graphics are used and little creativity is evident.	The model/poster is somewhat attractive in terms of design, layout, and neatness. One or two graphics are used to reflect some student creativity.	The model/ poster is attractive in terms of design, layout and neatness. Several of the graphics used on the poster reflect student creativity in their creation and/or display.	The model/poster is exceptionally attractive in terms of design, layout, and neatness. All of the graphics used on the poster reflect a exceptional degree of student creativity in their creation and/or display.
EARTH'S INTERACTIONS	Does not illustrate interactions between spheres.	Illustrates 1 interaction between spheres Somewhat describes each interaction.	Illustrates 2 or more interactions between spheres Describes each interaction.	Illustrates 3 or more interactions between spheres Describes each interaction.
MECHANICS	Many grammatical, spelling, or punctuation errors.	A few grammatical, spelling, or punctuation errors.	Almost no grammatical, spelling, or punctuation errors.	No grammatical, spelling, or punctuation errors.
PRESENTATION	Information presented was unclear, rushed etc.	Information presented was somewhat clear, somewhat hard to follow.	Information was clear, easy to follow.	Information was very clear, loud, clear voice.

Next Generation Science Standards – Inquiry
 NGSS Practice 1: Asking Questions and Defining Problems
 NGSS Practice 2: Developing and Using Models
 NGSS Practice 4: Analyzing and Interpreting Data
 NGSS Practice 6: Constructing explanations
 NGSS Practice 8: Obtaining, Evaluating and Communicating Information
 Next Generation Science Standards – Content
 5-ESS2-1 Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.

