**ESS Unit 4: the Interior of the Earth**

What do you know about the Earth’s innards? What do you *think* you know about the Earth’s insides? What preconceived ideas are you starting this unit with?

Please grab some colored pencils from the back of the classroom, and then, in the space below, make an artistic rendering of what you believe the Earth’s interior looks like. One idea is to make a “cross-section” map of the Earth, but that’s just one idea…. Do whatever helps you to express your ideas about what lies below the Earth’s surface.

Have you finished your artwork? If your answer is yes, please keep reading…

Please watch the movie trailer to the classic 1959 film [*Journey to the Center of the Earth*](https://youtu.be/0v7FtXNuQlY). The film is (loosely) based on the science fiction novel of the same name by Jules Verne. As you watch the trailer, think about the following questions:

In what ways, if any, is the Earth’s interior from the film similar to what you imagined it to be like?

In what ways, if any, is the Earth’s interior from the film different from what you imagined it to be like?

Is there anything in the trailer that you think might not actually be scientifically accurate?

Guided Reading:

Discover Magazine article “*Journey to the Center of the Earth*”

*by Susan Kruglinski*

Now, let’s see what actual Earth Scientists have to say about the interior of the earth. Find and download the article “*Journey to the Center of the Earth*” on the class website, and then find one other person in the class that you’d like to work with on this assignment. Find a place near the classroom where you and your partner will be able to sit and read to each other such that a) you can hear each other clearly, and b) you won’t be distracted by other students. Then, take turns reading the article aloud to each other, switching reader/listener after each paragraph.

Once you are finished reading, return to the classroom and use the text to answer the questions below.

Page 1 Questions

1. How deep and wide was the tunnel that the Russian geologists started drilling in 1970?
2. What is the distance from the Earth's surface to the core?

Page 2 Questions

1. What do geophysicists study in order to develop a better understanding of Earth's interior?
2. What do faster moving waves indicate?
3. What is the range of thickness in Earth's crust?
4. How much of Earth's mass is in the mantle?
5. Why is the inner core in a solid state even though the temperature is 11000 degrees Fahrenheit?
6. How does the geodynamo help to protect life on Earth?
7. What did Geophysicists at the Carnegie Institution of Washington propose the inner core was composed of?
8. Why was this hypothesis challenged?

Page 3 Questions

1. What does geophyscist J. Marvin Herndon believe exists at the Earth's center?
2. What is needed to be able to test Herndon's idea?
3. How much luck have scientists had in creating large physical models of the core?
4. What is Stevenson's proposal on how to get direct evidence of Earth's center?

Page 4 Questions

1. Why can't Stevenson conduct the experiment?