**Interactive: The Earth’s Interior**

**ESS Mr. Lanik**

Please use [this interactive model](https://ees.as.uky.edu/sites/default/files/elearning/module06swf.swf) of the Earth’s interior to develop through, detailed responses for the following prompts.

*The earth is made of concentric layers of rock with a core of iron-rich metal. How do we know this?* To begin to answer this question, watch how waves created by an earthquake travel through the Earth as they spread out.

Seismic Waves: Watch [this computer animation](http://ds.iris.edu/seismon/swaves/) of seismic wave travel before answering the following questions.

Which type of wave travels fastest?

What happens to the line of P waves as the waves travel through the Earth?

Do S waves travel to the exact opposite place on the Earth from where the earthquake occurred?

About how much time passes before the seismic waves from the earthquake completely dissipate?

What does the “p” in P wave stand for? What does the “s” in S wave stand for?

Seismic waves travel through the Earth by causing the atoms within the Earth to move and vibrate. In the space below, show how the motion of the atoms resulting from a P wave differs from the motion that occurs during an S wave.

Do P waves and S waves differ from each other in terms of the types of materials that they can move through? Be specific in your response.

Based on your answer to the previous question, how might geoscientists be able to determine which parts of the Earth’s interior are solid, and which are liquid?

**The Crust:**

How are Oceanic Crust and Continental Crust different from each other? Identify two differences.

What four types of scientific data have provided scientists with information about the types of rocks that exist near the bottom of the Crust?

a)

b)

c)

d)

**The Mantle:**

How close to the Earth’s surface does the Mantle rise, and how deep into the Earth’s interior does it go?

What percentage of the total volume of the Earth is in the Mantle?

Does the chemical make up of the Mantle change as you move from the top down to the bottom? If yes, how does it change?

Does the “state of matter” of the mantle change as you move from the top down to the bottom? If yes, how specifically does it change?

What four types of scientific data have provided scientists with information about the chemical composition of the rocks that make up the Mantle?

a)

b)

c)

d)

Yo, what’s a Moho?

What happens to seismic waves as the move from the Crust into the Mantle?

In your own words, describe what a “seismic boundary” is.

Why do the paths of seismic waves curve, rather than follow straight lines, as they pass through the Earth’s interior?

Explain how the authors use a model of driving through city traffic to explain the curving of seismic waves in the Earth.

What is the Lithosphere?

What is the Asthenosphere?

What happens to P and S waves as they pass from the Lithosphere into the Asthenosphere?

The Core:

What is the chemical composition of the Core?

How is the Inner Core different from the Outer Core?

How have scientists been able to predict the chemical composition and behavior of the Core if we’ve never been able to visit or directly investigate materials from the Core? There are 5 pieces of Evidence—briefly describe each.

a)

b)

c)

d)

e)

What is a Seismic Wave “shadow zone”?

What do S Wave shadow zones tell scientists about the Core?

What do P Wave shadow zones tell scientists about the Core?

What is the scientific evidence that there is a solid Inner Core inside of the liquid Outer Core?