Physics	**Lesson 14: Journey to the centre of the Earth**	
Curriculum Key:	OCRB P1h	(plus Additional Science specifications)

Objective(s)

1. The Earth has a layered structure and an iron core
2. There are two types of seismic waves (S and P).
3. The behaviour of seismic waves leads to theories about the Earth's structure.

Resources needed:

PowerPoint for starter

Laminated cards for Main Activity 1

PowerPoint and fact sheet for Main Activity 2

Graph activity for plenary.

Starter: *10 minutes*

Use PowerPoint of ideas about the 'hollow earth' to stimulate interest in the structure of the Earth.

Teacher input/assessment

Teacher prompts to aid discussions about the basis and feasibility of such models.

Main Activity 1: *15 minutes*

Students use fact cards to reach a conclusion about one part of the structure (iron core). They should be encouraged to order them logically to support their conclusion.
Use mini-whiteboards to share conclusions with whole group.

Teacher input / assessment

Facts should empower students to come to the conclusion that there is iron in the Earth. Guide them!

Main Activity 2: *20 minutes*

PowerPoint slides introduce facts about seismic waves, which gradually give more clues about the Earth's structure. Pupil sheet summarises facts; students select relevant information to reach a conclusion about the layered structure. In groups, students present their theory of the Earth's structure. More able groups should be encouraged to state the evidence that led them to their conclusion.

Teacher input / assessment

With less able students, teacher may assist to develop links between facts and what can be inferred from them.

Plenary: *15 minutes*

Graph activity; students use structured questions to interpret graph of velocity versus depth.

Teacher input / assessment

Teacher could introduce graph as a PowerPoint slide if it is felt that features need highlighting or explaining.

Learning Outcomes:

All students must: be able to label a diagram showing our present knowledge of the Earths structure.

Most students should: state the evidence that has led to this model.

Some students could: link specific evidence to argue each step of the model and discard irrelevant evidence.

Key Skills: defend conclusions with relevant supporting evidence.

Key words: crust, mantle, outer/inner core, seismic waves, P & S waves.

Homework: Research about cause of earthquakes.

Differentiation:

More able: Will appreciate the differences between P & S waves and also grasp the relationship between velocity and depth of wave.

Less able: Will realise that the Earth is not hollow and know that waves of different types help scientists analyse the centre of the Earth.