



TEACHER RESOURCE GUIDE

EPISODE 3: EVIDENCE OF A WARMING PLANET

Brief Description

You might not know it, but many of the things we take for granted come from the work of scientists. Take an x-ray machine, for example. It can peer into our bodies, helping doctors identify broken bones. Thousands of scientists around the world have developed tools to see changes to the Earth over time. Just like an x-ray, these tools help us learn things we might not be able to see otherwise. For example, Paleoclimatologists examine air bubbles trapped in ice, to determine climate conditions from thousands of years ago. Paleoclimatologists know that the Earth warmed up about five degrees Celsius starting about 15,000 years ago. That warming happened pretty gradually, over about 5,000 years. The problem we have now is that the Earth is warming up nearly that much over just a couple of hundred years. It's as if the stove was suddenly turned up.

Keywords/Key Concepts

Celcius	A temperature scale on which the freezing point of water is 0 degrees and the boiling point of water is 100 degrees (also known historically as centigrade).
Dinosaur	One of a large group of reptiles that lived millions of years ago.
Fahrenheit	A scale of temperature on which water freezes at 32° and boils at 212°
Melt	To change from a solid to a liquid.
Paleontologist	A scientist who finds and studies fossils. Some paleontologists study dinosaurs.



TEACHING IDEAS WHEN USING VIDEO IN THE CLASSROOM

While watching television is often seen as a passive viewing experience, there are ways to turn it into a springboard for student interaction. Here are some general teaching strategies that enhance the use of video materials in your classroom by targeting specific skill sets.

- **Predicting**
- **Viewing Comprehension**
- **Listening Practice**
- **Speaking Practice**
- **Discussion**

PREDICTING

With picture and audio on:

- Use the pause control to stop a scene and have students predict what will happen next.
- Use the pause control to stop after a particular line of dialogue and have students predict the next line.

With audio off:

- Have students predict the situation and characterizations based on viewing an entire scene without the sound.
- Have students predict lines of dialogue after viewing an entire scene without the sound.
- Have students predict individual lines of dialogue by using the pause button to stop the scene.

With picture off:

- Have students predict the situation and characterizations by listening to the soundtrack without watching the picture.

VIEWING COMPREHENSION. You can check students' understanding of the situation in the following ways:

Before watching:

- Give students specific things to look and listen for before they watch a scene.

While watching:

- Freeze-frame the scene by using the pause button and check students' understanding

While watching or after watching:

- Have students answer comprehension questions you devise.

After watching:

- Give students cloze scripts and have them fill in missing words in dialog lines.

LISTENING PRACTICE. Have students focus on the dialogue contained in a scene by listening for particular vocabulary words, structures, or functional expressions:

TV Dictation:

- Have students write dialogue lines as they view them, using the pause control to stop the scene after each line.

Cloze Scripts:

- As students view a scene, have them fill in missing words in a cloze script you have created.

SPEAKING PRACTICE

Role Plays:

- Have students role play a scene, practicing the lines of dialogue for correct intonation and emphasis.

On-Location Interviews:

- Have students circulate around the classroom and interview each other using questions contained in the video segment. Students can then report to the class about their interviews.

Information Gap:

- Have half the class see a segment without audio and the other half hear it without the picture. Students from each half of the class then pair up, talk about the situation and characters, and act out the scene.

Strip Dialogue Scenes:

- Write dialogue lines on separate strips of paper, distribute them randomly, and have students recreate the scene by putting the lines together.

DISCUSSION

- Have students discuss the scene, plot and characters' actions, thoughts, and feelings.
- Have students think about what the characters in the scene are thinking but not saying. Students can create these interior monologues, present them to the class, and discuss any varying opinions about characters' inner thoughts during the scene.
- Have students tell which characters they identify with and explain why.

Adapted from *Side by Side TV Reference Guide*.



Episode 3: Evidence of a Warming Planet

You might not know it, but many of the things we take for granted come from the work of scientists. Take an x-ray machine, for example. It can peer into our bodies, helping doctors identify broken bones.

Thousands of scientists around the world have developed tools to see changes to the Earth over time. Just like an x-ray, these tools help us learn things we might not be able to see otherwise. For example, Paleoclimatologists examine air bubbles trapped in ice, to determine climate conditions from thousands of years ago.

Paleoclimatologists know that the Earth warmed up about five degrees Celsius, or 9 degrees Fahrenheit starting about 15,000 years ago. That warming happened pretty gradually, over about 5,000 years. The problem we have now is that the Earth is warming up nearly that much over just a couple of hundred years. It's as if the stove was suddenly turned up.

Scientists also study the Earth's more recent temperature changes. In 1880, people started recording the temperature all over the world, so we have a clear picture of how much the Earth, on average, has warmed since then.

As you can see, between 1880 and 2000, Earth's average air temperature rose about .8 degrees Celsius. That's about 1.4 degrees Fahrenheit. And scientists project that the Earth will warm up another 3 degrees Celsius [5.4 F] or more by the year 2100.

That might not sound like much, but consider this: Ice freezes at 0 Celsius, or 32 Fahrenheit. It *doesn't* freeze at .5 Celsius, or 33 Fahrenheit. This has some big effects.

One effect is that a lot of the Earth's ice is melting. Scientists who study glaciers -- big, slow-moving bodies of ice that exist at the poles and in high mountains, have found that 95 percent of the world's glaciers are getting smaller. The thick ice sheets that cover the North Pole are melting, too.

The Earth's melting ice is contributing to rising sea levels, too. Scientists have measured about an 18-centimeter, or 7-inch rise in sea level since 1880, and there's no sign of it slowing down.

You might be thinking, what's the big deal? The Earth is a little warmer, and it's melting stuff. So what? Well, the problem is that life on Earth isn't designed to adapt to changes like this when they happen so quickly.

We'll look at how the planet is struggling to deal with Rapid Climate Change soon, but first, let's look at what's causing the warming.

EPISODE 3: EVIDENCE OF A WARMING PLANET





