



Teacher's Notes: Plate Tectonics

Learning Objectives:

The students will be able to match identify a tsunami, geyser, mountain, volcano, earthquake.
The students will be able to explain and/ write sentences about what can occur when plates move.
The students will be able to define plates.
The students will be able to explain where the largest plate is located.
The students will be able to explain the Ring of Fire.

Activities

1. Create plate tectonics using graham crackers. <https://www.playdoughtoplato.com/graham-cracker-plate-tectonics/>
2. Get a collection of nature magazines that feature wildlife. Have students look for pictures of things that can occur when plates collide (mountains, geysers, earthquake, volcano, tsunami). Depending on group you could use the pictures for different things:
 - Everyone glues their picture on one big poster board.
 - Students make their own collage
 - Students write a sentence describing each picture.
3. Students do an image search related to plate tectonics. Use the technology printable. Have the students save pictures of their favorite ones. Those are then inserted onto a Word document or a PowerPoint. Students write a sentence about picture.
4. Create your own geyser. <https://bestscienceexperimentsforkids.com/mentos-soda-experiment-create-your-own-geyser> or <https://study.com/academy/lesson/geyser-activities-crafts-experiments-for-kids.html>
5. Create your own tsunami. <https://www.youtube.com/watch?v=DZZFPCY6RIE>

General Tips: The goal is to build background knowledge while leading an engaging discussion on any and all information that can be talked about on a given page. The items that you choose to bring up or focus on should be modified for the students you are working with. For example, if you have a student who can point to something in the picture, answer yes/no questions be sure to incorporate a lot more of that as you go through the book. On the same token, be sure to ask a lot of comprehension questions and critical thinking questions at the level appropriate for students. There is something for everyone.

Page 1: The Earth is made out of rocks. These rocks fit together like puzzle pieces. The rock puzzle pieces are called plates. All of Earth's land and water sit on top of these plates. **Point:** map, Earth, rock

WH Questions: What is the Earth made out of? How many plates cover the Earth? **Yes/No:** Is Earth made out of paper? Is Earth made out of rock? Are the flat rocks underground called bowls? Are the

flat rocks underground called plates? **Opinions/Experiences:** **Peer to Peer Interaction:** After you read Page 1, ask students, “What are the flat rocks that cover the Earth called?” The answer is the main idea card “plates.” Students will find the main idea card and read it to their partner. Teacher will prompt them to ask their partner some of the questions talked about above.

Page 2: Geologists are scientists. They study what Earth is made of and how it was created. Earth’s plates move. Sometimes they crash into each other. Geologists learn what happens to the Earth when plates collide. Have students view the following video about tectonic plates.

<https://www.youtube.com/watch?v=yBr-D1cFmEs>

Point: volcano, man, point/volcano icon **WH Questions:** What do geologists study? **Yes/No:** Are geologists airplane pilots? Are geologists scientists? Is plate tectonics the study of cars colliding? Is plate tectonics the study of plates colliding? **Opinion/Experiences:** Do you think studying rocks would be fun? Do you have a special interest? What do you like to study? **Peer to Peer Interaction:** After you read Page 2, ask students, “What do geologists’ study?” The answer is the main idea card “plate tectonics.” Students will find the main idea card and read it to their partner. Teacher will prompt them to ask their partner some of the questions talked about above.

Page 3: Mountains are large pieces of land that rise high above the ground. Mountains are created when two plates crash into each other. The plates crash very slowly. It takes millions of years for mountains to form. **Point:** mountains far away, mountains up close, rocks, mountain icon **WH**

Questions: What is a large piece of land that rises high above the ground? **Yes/No:** Is a mountain created when two ocean waves collide? Is a mountain created when two plates collide? Can a mountain be created over night? Does it take millions of years for a mountain to be created?

Opinion/Experiences: Have you ever collided with another person? Did you get a bump on your head? Bumps appear very quickly; mountains take a long time to form. **Peer to Peer Interaction:** After you read Page 3, ask students, “What is created when two plates collide?” The answer is the main idea card “a mountain.” Students will find the main idea card and read it to their partner. Teacher will prompt them to ask their partner some of the questions talked about above.

Page 4: When two plates collide it can cause the earth to shake. This shaking is called an earthquake. Earthquakes only last a few minutes. Earthquakes can cause a lot of damage to the ground and buildings. Have students view a few minutes of the following video showing earthquakes.

<https://www.youtube.com/watch?v=QON-DcF67iE>

Point: fallen powerlines, street cracked **WH Questions:** What is it called when the earth shakes? What collides to cause an earthquake? **Yes/No:** Are earthquakes caused when two cars collide? Are earthquakes caused when two plates collide? Does an earthquake make the ground cold? Does an earthquake make the ground shake? **Opinion/Experiences:** Can you shake your body? Do you think this is what it feels like when the ground shakes? What are some things that can happen during an earthquake? **Peer to Peer Interaction:** After you read Page 4, ask students, “What do they call it when two plates collide and cause the ground to shake?” The answer is the main idea card “an earthquake.”

Students will find the main idea card and read it to their partner. Teacher will prompt them to ask their partner some of the questions talked about above.

Page 5: When a volcano erupts, it throws very, very hot fiery rock and dust up into the sky. It is a huge explosion! Colliding plates can cause a volcano to erupt. Have students view the following video of a volcano erupting. <https://www.youtube.com/watch?v=R0Zbj7S22zs>

Point: dust/smoke, fire, volcano **WH Questions:** What causes a volcano to erupt? When a volcano erupts, what gets thrown up into the sky? **Yes/No:** Does a volcano erupt when two people bump into each other? Does a volcano erupt when two plates collide? When a volcano erupts does it throw footballs into the sky? When a volcano erupts does it throw hot fiery rock into the sky?

Opinion/Experiences: Have you picked up a hot baked potato? What did you do with the hot potato? Have you seen other students make an erupting volcano for a science project? **Peer to Peer Interaction:** After you read Page 5, ask students, “What happened when very hot fiery rock and dust was thrown into the sky?” The answer is the main idea card “a volcano erupted.” Students will find the main idea card and read it to their partner. Teacher will prompt them to ask their partner some of the questions talked about above.

Page 6: A geyser is when boiling hot water and steam shoot up from the ground. It is like a vent in the ground. This is also cause by two plates colliding. Have students view the following video of the Old Faithful geyser erupting. <https://www.youtube.com/watch?v=wE8NDuzt8eg>

Point: ground, geyser/shooting water **WH Questions:** What is boiling hot water that shoots up from the ground called? **Yes/No:** Are geysers caused when two mountains collide? Are geysers caused when two plates collide? **Opinion/Experiences:** What happens when a pot of water starts to boil? Is the steam from a boiling pot of water very hot? **Peer to Peer Interaction:** After you read Page 6, ask students, “What is boiling hot water and steam shooting up from the ground called?” The answer is the main idea card “geyser.” Students will find the main idea card and read it to their partner. Teacher will prompt them to ask their partner some of the questions talked about above.

Page 7: When plates collide suddenly, it can cause a tsunami. A tsunami is a wave that travels across the ocean very fast. The wave gets bigger and bigger as it moves. Have students view the following video about tsunamis. https://www.youtube.com/watch?v=V6cnFM55_Dw

Point: big wave, light house, wave icon **WH Questions:** What happens when plates suddenly collide? What is a big wave that gets bigger and bigger? **Yes/No:** Is a tsunami a big rain storm? Is a tsunami a big ocean wave? Is a tsunami caused because a plate broke? Is a tsunami caused when two plates collide? **Opinion/Experiences:** Do you like going to the beach? Have you ever been knocked down by a big wave? Do you think the ocean is scary? **Peer to Peer Interaction:** After you read Page 7, ask students, “What is a wave the travels across the ocean getting bigger and bigger?” The answer is the main idea card “tsunami.” Students will find the main idea card and read it to their partner. Teacher will prompt them to ask their partner some of the questions talked about above.

Page 8: There are 15 plates that cover the Earth. They are all different sizes. The biggest is under the Pacific Ocean. People who live in California go to the Pacific Ocean to swim. **Point:** ocean, Pacific Ocean, plates map **WH Questions:** Where is the biggest plate located? **Yes/No:** Is the biggest plate under the moon? Is the biggest plate under the Pacific Ocean? **Opinion/Experiences:** Do you have different size plates at home? Do you have one plate that is bigger than the other plates? **Peer to Peer Interaction:** After you read Page 8, ask students, “Is the plate under the Pacific Ocean the smallest plate or the biggest plate?” The answer is the main idea card “biggest plate.” Students will find the main idea card and read it to their partner. Teacher will prompt them to ask their partner some of the questions talked about above.

Page 9: The majority Earth’s volcanoes can be found in the Pacific Ocean. These volcanoes make a circle around the plate in the Pacific Ocean. This circle is called the Ring of Fire. Have the students view the following video showing volcanoes along the Ring of Fire.

<https://www.youtube.com/watch?v=LgTRpSEJxEw>

Point: Pacific Ocean, ring of volcanoes, **WH Questions:** Where are most of Earth’s volcanoes? What forms a circle around the Pacific Ocean plate? What is the circle called? **Yes/No:** Is the Ring of Fire located in Disney World? Is the Ring of Fire located in the Pacific Ocean? Is the Ring of Fire where most hurricanes occur? Is the Ring of Fire where most volcanoes occur? **Opinion/Experiences:** Is fire dangerous? **Peer to Peer Interaction:** After you read Page 9, ask students, “What is the ring of volcanoes in the Pacific Ocean called?” The answer is the main idea card “Ring of Fire.” Students will find the main idea card and read it to their partner. Teacher will prompt them to ask their partner some of the questions talked about above.