

DAY 1: LESSON AND ASSESSMENT PLAN

Curriculum Standards

GSE (Georgia Standards of Excellence) / National Curriculum Standards

<https://www.georgiastandards.org/Frameworks/Pages/BrowseFrameworks/Frameworks.aspx>

S6E5. Obtain, evaluate, and communicate information to show how Earth's surface is formed.

f. Construct an explanation of how the movement of lithospheric plates, called plate tectonics, can cause major geologic events such as earthquakes and volcanic eruptions. (Clarification statement: Include convergent, divergent, and transform boundaries.)

ISTE Technology Standard

<https://www.iste.org/standards/for-students>

1. **Empowered Learner:** Students leverage technology to take an active role in choosing, achieving, and demonstrating competency in their learning goals, informed by the learning sciences.

Mode of Instruction

Virtual – 100% of my students have elected to continue virtual learning.

Learning Objective/Goal(s)

- K: I can explain the theories of plate tectonics, continental drift and sea floor spreading.
- K: I can list and identify the three main types of plate boundaries:
 - Divergent margins
 - Convergent margins (including collision and subduction zones)
 - Transform margins.

Specific learning objective: Students will over the three-day lesson plan be able to explain how major geologic events are created by the movement of the Earth's Tectonic Plates.

- Students will complete and participate in the following activity:
 - Prior knowledge: knowledge or skill from a previous unit of the Earth's Layers are needed for today's lesson.
 - Review of the composition of Earth's Layers: knowledge or skill from a prioritized standard in Unit 3.1
 - Vocabulary usage: ongoing skills students will need to be able to do with accuracy and ease the current work.
- Students will complete a pre-assessment of their prior knowledge and a post assessment that directly assesses the student's mastery of today's learning goal. If the assignment is not completed in class, the students will complete for homework.
- Students will complete an in-class assignment where they will demonstrate their ability to draw and describe plate tectonics.

Historically Responsive Framework: Teacher will introduce land features of Georgia and other regions of the United States. The students live in Georgia and will be introduced to travel to other states.

- Identities: Students will learn about land features of the state where they are from.
- Skills: Students will learn how to recognize the land features of the United States.
- Intellect: Students will discover how the knowledge of geographical features relates to geology.
- Criticality: Students will discuss how understanding of land features can help when planning a trip or the construction of roads to provide transportation to various parts of the United States or underserved communities.

Formative and Summative Assessment

The teacher will use to assess student learning, students will complete three formative assessment activities during the lesson.

- Students will complete an Uncovering Student Ideas Probe- Describing Earth's Plates- that requires students to answer what they know about plate tectonics.
 - Teacher will monitor all students as they participate in the activities to collect data on and areas of success.
 - Teacher will use data to adjust direct instruction and differentiate.
 - Students will have 5 minutes to complete the pre-assessment in Its Learning.
 - 2-3 Students will be selected to give their explanation of their thinking and describe tectonic plates.
 - The pre-assessment, formative assessment will not count as a grade but will count towards the students' class participation.
- Students will complete an in-class assignment where they will demonstrate their understanding of the movement of the plates of the Earth.
 - The students will complete the assignment in the Nearpod website called Plate Tectonics.
 - The automatic grading provide feedback to the students on the correctness of their responses and the teacher will address any misconceptions.
 - The assignment is graded for completion only and reports will be available on the Nearpod website for teacher to retrieve scores.
- Students will re-visit and complete a post -assessment -Uncovering Student Ideas Probe- Describing Earth's Plates- at the end of class.
 - Students will complete and submit in Its learning. If the assignment is not completed in class, the students will complete for homework.
 - The post-assessment, formative assessment will count as a grade.

Differentiation, Modification(s), & Accommodation(s)

Students with Disabilities and 504 plans: Students with Disabilities and/or 504 plans will be given extra time for assessments and assignments. Teacher will read aloud all questions multiple times and give instructions both verbally and in writing (in the chat box). Instructions will be broken down into small steps. Teacher will indicate what to write down and give ample time for students to write and draw on the Nearpod.

Students struggling with reading comprehension: Teacher will read aloud all questions multiple times and give instructions both verbally and in writing (in the chat box).

Instructional Strategies & Learning Tasks to Support Diverse Learners' Needs

Introduction or Student Spark (10 minutes)

- Teacher will review the standard for the day and let the students know specifically what will be covered during the lesson.
- Teacher will introduce vocabulary needed for today's lesson.
- Plate tectonics, convergent, divergent, and transform boundaries, earthquakes and volcanic eruptions.
- Teacher will review PowerPoint to compare and contrast land surface features of Georgia and other region in the United States. [Land Surface Features – To download click here.](#)
- Teacher will ask students what they notice, wonder, and what evidence they see.
 - Teacher will connect the land features of the state where they are from.
 - Teacher will ask if students recognize the land features of the United States.
 - Teacher will ask if students have wanted to visit places where geographical features are in State Parks.
 - Teacher and students will discuss how understanding of land features can help when planning a trip or the construction of roads to provide transportation to various parts of the United States or underserved communities.

Body (35 minutes)

- **Active Engagement/Inquiry (10 minutes)**
- Teacher will introduce the phenomena of Plate Tectonics.
- Students will complete an Uncovering Student Ideas Probe- Describing Earth's Plates- that requires students to answer what they know about plate tectonics.
- Students will have 5 minutes to complete the pre-assessment in Its Learning.

Earth History, Weathering and Erosion, and Plate Tectonics **25**

Describing Earth's Plates



What do you know about Earth's tectonic plates? Put an X in front of each statement that describes Earth's tectonic plates.

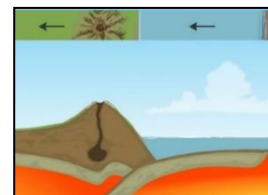
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|--|---|
| ___ A. Plates are huge, rigid slabs of rock. | ___ I. Plates are stacked in layers. |
| ___ B. Plates are different sizes. | ___ J. Each plate forms a continent. |
| ___ C. Plates are all about the same thickness. | ___ K. Plates cover most of Earth but not all of it. |
| ___ D. Plate boundaries form most of the coastline of the world. | ___ L. Patterns of earthquakes and volcanoes can be found along plate boundaries. |
| ___ E. Plates move very slowly. | ___ M. Plate boundaries can be found in the middle of the ocean. |
| ___ F. Plates float on top of hot liquid magma. | ___ N. Plates are made up of hot material. |
| ___ G. Some of the plates have large gaps between them. | ___ O. Plates are found deep within Earth. |
| ___ H. Plates can include both continental crust and ocean basins. | ___ P. Mountain chains formed along plate boundaries. |

Explain your thinking. Describe what you know about Earth's plates.

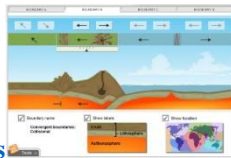
- **Student-Led Connection (10 minutes)**
- Teacher will select 2-3 Students volunteers to give their explanation of their thinking and describe tectonic plates.
- Teacher will give each student 1 minute to speak.
- Teacher will facilitate discussion that highlights explicit connections between student work and the goals of the lesson.
- Teacher will address misconceptions that come up during the group work.
- Teacher will use Talk Moves to facilitate the conversations.
- Teacher will show the Bill Nye Video Plate Tectonics – You Tube (stop at 2:00 minutes)
- Teacher will discuss the tentative nature of science and how things change over time.
- Students will be asked what they as scientist think would happen if the Earth beneath us moves.
- Students will be encouraged to start to construct an explanation of what changes will happen.
- Teacher will discuss the changes in nature that would occur as teacher introduces the nature of science to the students.
- Teacher will introduce how evidence requires interpretation that scientist have to also be creative to exhibit the nature of science.

Work Period (40 minutes)

- **Teacher will ask the Warm-up questions only on the Plate Tectonics SE Worksheet.**
 - **Gizmo Warm-up (Full document) – Use Warm-up only**
- Teacher will state the following:
 - Volcanoes, earthquakes, mountains, and other features of Earth's surface owe their origin to the movements of **plates**: enormous, slowly moving sections of Earth's crust. At plate boundaries, plates collide, move apart, move under or over each other, or slide past one another.
- **Collaborative Group Work: Learning GIZMO- Plate Tectonics.**
- Teacher will demonstrate and model the use of the Learning Gizmo and follow the Task Card Instructions.
 - Teacher and students will work collaboratively explore the virtual lab simulation in the Gizmo to answer questions using their observations to determine the movement of plates boundaries. Together they will complete the worksheet- Task Card: Plate Tectonics.
 - Teacher will give students control of the screen in the TEAMS app and allow the students to request control of the screen to participate and learn the function of the Gizmo.



- Teacher will monitor (listen/coach, asks questions to assess/advance thinking, take anecdotal notes, etc.) of students as they work on problems to collect data.
- Teacher will use data collected to determine common misconceptions to address during instruction.



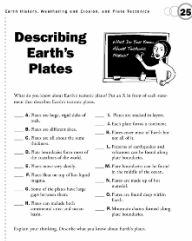
We will explore the Task Card: Plate Tectonics

Teacher Stamps Learning & Check for Understanding (20 minutes)

- Teacher will restate learning target for the day and the success criteria.
- Teacher will place link in the chat for the Nearpod Lesson (Plate Tectonics: 6-8 (nearpod.com)).
<https://nearpod.com/t/science/8th/plate-tectonics-68-L52857433>
- Students will log on to the Nearpod link.
- Students will complete the activity on Plate Tectonics that has questions embedded and drawings enabled, to check for understanding.
 - Teacher will share students will work with other students.
 - Teacher will monitor all students as they work on the Nearpod to collect data on areas of success and misconceptions.
 - Teacher will use data to provide just-in-time direct instruction.

Closing (10 minutes)

- Teacher will close Students will revisit the Uncovering Student Ideas probe – Describing Earth Plates and clear up misconceptions as a Post-Assessment. Students will complete this assessment in Its Learning.
- with a revisit to the probe and introduce/reinforce to connect the movement of the plates to volcanoes and earthquakes
- Students will complete Post-Assessment before beginning to work on their asynchronous assignment.



Facilitation & Safety

- For online students, students will observe the protocol we established at the beginning of the year. Cameras do not have to be turned on, yet they are encouraged. Microphones will be muted unless the student is responding to the teacher. The chat box will only be used to discuss aspects of the course, and students will use appropriate language when posting a chat.
- For in-class students (not applicable for this class period), we will observe Rockdale County's Covid-19 policy. Students and teachers will always wear masks, and all students and teachers will remain a distance of at least 6 feet apart. Students and teachers will not be allowed to share supplies, so students must have their own supplies for the class.
- Desks are arranged in groups of two six feet apart for contact tracing. However, only one person will be allowed to sit at each group of desks due to Covid-19 regulations.
- Students will be required to adhere to classroom norms that are posted within the classroom.
- Disruptions will be handled according to Memorial Middle School's discipline procedures.
- To ensure engagement, teacher will call on both virtual and in-person students to answer questions.

TC Name: Valena Spencer

Day & Date: Day 1 March 4th, 2021

Subject Area & Grade Level: 6th Grade Earth Science- 4th Period

Number of Students in Class: 20

Layered Texts and Other Materials

Keeley Probes
Explorelearning.com
Nearpod.com

References

<http://www.rockdaleschools.org/>

Keeley, P. (2016). Formative Assessment Probes: Promoting learning by assessment - Talk Moves. *Science and Children*, April/May 24–26. <https://my.nsta.org/resource/103881/formative-assessment-probes-talk-moves>

Keeley, P., & Tucker, L. (2016). *Uncovering Student Ideas in Earth and Environmental Science: 32 New Formative Assessment Probes* (1st ed.). National Science Teachers Association. <https://rcpsscience-nsta-patron.eb20.com/Collections/ViewBook/a9f0723d-06fc-495f-ba74-c6985fe670b2>

Muhammad, G. (2020). *Cultivating Genius: An Equity Framework for Culturally and Historically Responsive Literacy*. Scholastic.

[Plate Tectonics Gizmo : Lesson Info : ExploreLearning](#)

[Tenets of the nature of science — Science Learning Hub](#)