ALTERNATIVE LESSON PLANS FOR DISTANCE LEARNING

These alternative lesson plans condense what is taught and suggest ways to support students learning at home.
We acknowledge that every situation is unique and strive to provide plans that can be used online or as printed packets.
Focus on fewer scientific principles. Use print and audio readings. Share the videos that you can. Discuss if you can.

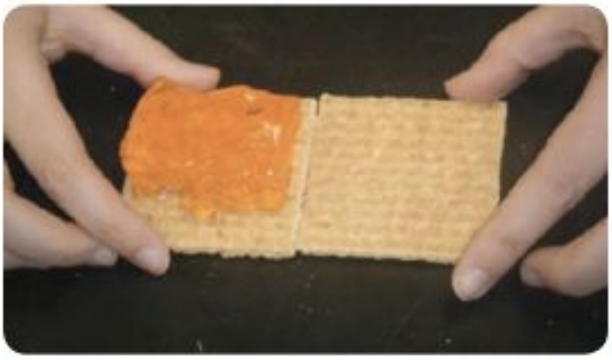
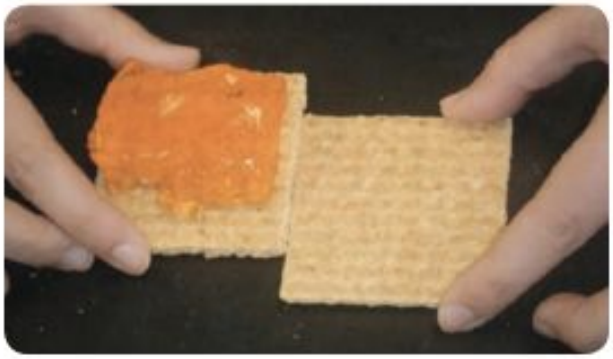
UNIT TITLE	**ES3**
DRIVING QUESTION	How is Earth Changing?

Lesson 1 (3 days)	**Where Is the Earth Changing?**
Activity 1.1	Worldwide Pattern of Volcanoes Share projected images: 1. Physical Map of the Earth 2. Volcano Locations Search for video of volcanic eruptions or use this https://pmdvod.nationalgeographic.com/NG_Video/652/991/1667130947966_1578352034468_1667141187581_mp4_video_1024x576_1632000_primary_audio_eng_3.mp4 The goal of the video is to provide access to engaging phenomena with which students may be unfamiliar and to enhance interest and foster student questioning.
Activity 1.2	Worldwide Pattern of Earthquakes Share projected images 1. Earthquake Locations 2. Physical Map of the Earth and Volcano Locations
Reading 1	*Volcanoes and Earthquakes*
Activity 1.3	Earthquakes, Volcanoes, and World Elevation Share projected images 1. Earthquake and Volcano Locations 2. Elevation 3. Earthquakes, Volcanoes, and Elevation: 4. Earth's Plates Share an image of a dinner plate - such as this: 

Lesson 2 (2 days)	**How Did the Earth Look in the Past*?***
Activity 2.1	The Theory of Continental Drift: Parts 1A/1B and 2 Share: Information Packet https://d16dnhlej6sizh.cloudfront.net/assets/portal/Teacher-Portal-Resources/ES3_te_v2_0_5-phenomena_information_packet-315.pdf Teachers may want to assign several students the same information sheet and discuss. Share projected images 1. Physical Map of the Earth 2. Pangaea to Present Earth
Reading 1	What Is Continental Drift? Share : https://youtu.be/RA2-Vc4PIOY
Activity 2.2	The Exploration of the Ocean Floor Share: https://youtu.be/-np488lVaDY or search for video on seafloor spreading.

Lesson 3 (1 day)	**What Is the Composition of the Earth's Surface?**
Activity 3.1	The Theory of Plate Tectonics Complete background information only and discuss. Share: https://d16dnhlej6sizh.cloudfront.net/assets/portal/Teacher-Portal-Resources/ES3_se_v2_0_5_video-activity_3-270.mp4

Lesson 4 (2 days)	**What Makes the Plates Move?**
Activity 4.1	Convection in Liquids Search for youTube video of liquid convection of magma or Share: 1. https://d16dnhlej6sizh.cloudfront.net/assets/portal/Teacher-Portal-Resources/ES3_se_v2_0_5_video-activity_4-271.mp4 2. https://d16dnhlej6sizh.cloudfront.net/assets/portal/Teacher-Portal-Resources/ES3_se_v2_0_5_video-activity_4-272.mp4 3. https://youtu.be/bN7E6FCuMbY 4. https://youtu.be/iLo6lOK1yIY or https://youtu.be/WEDUtS0IMws
Reading 1	*Formation of Metamorphic Rocks* Share after reading*:* *https://youtu.be/EKFnPVIHAjY*
Activity 4.2 (optional)	Silly Putty® Rocks Optional if students have silly putty at home.

Lesson 5 (2 days)	**How Do Plates Interact with Each Other?**
Activity 5.1	What Happens When Plates Move? Share projected image 1. Earth's Plates Search for video clips that demonstrate the phenomenon of ocean floor spreading by using search terms such as the following: ocean floor spreading, plate tectonics, volcanoes, formation, slab pull, plate movement, and subduction, or Share : https://youtu.be/3yD7jmHcdVc Teachers will need to modify student work to reflect the video selected and discuss. Teachers may also choose to share this image from the TE and discuss  
Reading 1	*Ring of Fire*
Activity 5.2	Two Types of Rock Comprise Plates Teachers may choose to share these images from the TE  

	<table><tr><th>Plate Type</th><th>Rock Type</th><th>Relative Thickness</th><th>Rock Density (Approx.)</th></tr><tr><td>Continental</td><td>Granite</td><td>Thicker</td><td>2.65g/mL</td></tr><tr><td>Oceanic</td><td>Basalt</td><td>Thinner</td><td>3.01g/mL</td></tr></table>   Search for video demonstrating convergent plate boundary interaction or Share: *https://youtu.be/d-8MjqwZ6Og*

Lesson 6 (2 days)	**What Causes Volcanoes?**
Activity 6.1	Volcano Formation Share: https://d16dnhlej6sizh.cloudfront.net/assets/portal/Teacher-Portal-Resources/ES3_se_v2_0_5_video-activity_6-273.mp4
Activity 6.2	Hotspot Formation Share: https://d16dnhlej6sizh.cloudfront.net/assets/portal/Teacher-Portal-Resources/ES3_se_v2_0_5_video-lesson_6_life_of_hotspot_volcanic_island-284.mp4 https://d16dnhlej6sizh.cloudfront.net/assets/portal/Teacher-Portal-Resources/ES3_se_v2_0_5_video-lesson_6_what_is_a_hotspot-285.mp4
Reading 1	*Is a Hotspot Lurking beneath the Continental United States?*

Lesson 7 (1 day)	**How Are Plates Moving?**
Activity 7.1	How Are Plates Moving? Share projected image 1. Ocean Floor Age 2. Direction of Plate Movement Teachers may also choose to view this video again as they discuss: https://youtu.be/3yD7jmHcdVc

Lesson 8 (1 day)	**How Does New Plate Material Form**
Activity 8.1	How Does the Earth Cycle Rock Material? Teaches may want to share the completed list of Scientific Principles with students at this time.
Reading 1	*Recycling for Earth and Cycling within Earth*

Lesson 9 (2-3 days)	**What Do We Know about Plate Tectonics?**
Activity 9.1	Creating a List of Important Ideas and Annotating a Cross Section of Earth Teachers may choose to share the list of concepts to brainstorm from the Teacher Background Information in the TE for this activity.
Reading 1	*How Well Do Scientists Understand Plate Tectonics?*
Activity 9.2	Filling Out the Summary Chart Teachers may choose to share the list of concepts to brainstorm from the Teacher Background Information in the TE for this activity.
Reading 2	How Does Plate Tectonics Affect Me?
Activity 9.3	Building Physical Models *(Optional Activity*)

Lesson 10 (1 day)	**What Is Happening at the Case Study Sites?**
Reading 1	*How Are Case Studies Useful?*

Appendix 1 (1 day)	***Modeling Earthquake- Proof Structures***
Reading 1	*What happens In an Earthquake?*

Appendix 2 (1 day)	**Geologic Time**
Reading 1	*Reconstructing Earth's History*

Appendix 3 (1 day)	**Fossil Record**
Reading 1	*Fossils Finds*

SUMMATIVE ASSESSMENT: Students should be able to write a scientific explanation for the Driving Question: How is Earth changing? Teachers may choose to use the CER written at the end of Lesson 8 and the Summary Chart from Lesson 9 to assess student learning.

You might choose to emphasize only a portion of this as a final assessment, given what you are able to teach and what students are actually able to do during this remotely taught unit.