Fourth Grade Science Curriculum

Science Strand: Earth Science 4.ESS.1

- Earth's surface has specific characteristics and landforms that can be identified.

Vocabulary:

Week 1	**Essential Questions & Key Ideas/Mini- Lesson Suggestions**	**Mentor Text Provided:**
	Lesson 1: Map out location of Earth's water (to see how much of Earth is water); determine the amount of fresh and salt water. Black and white map **Lesson 2:** Generation Genius video- Water Quality and Distribution	**Additional Activities/Texts:** • Earth Science Vocabulary Quizlet • Globe toss (Online version https://www.discoverwater.org/blue-planet/) Using an inflatable globe, toss the globe to a student. When the student catches the globe, ask them if their right thumb is on water or land. Have that student toss the globe to another student and ask the same question, "Is your right thumb on water or land? Tally the responses on the board. Water should get about three-fourths of the responses while land gets about one fourth of the responses. Make sure to toss the globe to enough people so that the numbers work out. Ask students to notice and wonder as the responses are tallied. • Blue Plant Article and Activities (Bead visual of % of Earth covered in water) • Visual of Freshwater/Saltwater Explanation of Video • Why is the Ocean Salty Article Activity:Model Useable Freshwater on Earth • Gather the following materials: clear 1 liter bottle filled with water (labeled oceans), 6 small clear plastic cups (labeled ice, groundwater,

		lakes, swamps and rivers), a graduated cylinder, medicine dropper and blue food coloring. • As a class, discuss the following questions: Why do you predict Earth is called the Blue Planet? (Mostly covered in water) How much water is there on earth? (70%) Where is all of the water located? (Rivers, lakes, underground and in the ocean) • On the board, write 2 Liter (1000mL) =100% of the water on earth. Underneath, write ice, groundwater, lakes, swamps, rivers and oceans. • Display the bottle and the cups for all students to see. The liter bottle should contain 1000 mL of water (1 liter). Add blue food coloring to the water for better visibility. • Have volunteers use a graduated cylinder or medicine dropper to measure and pour the following amounts of water to the appropriate cup and label on the board: ice: 20.6 mL; groundwater: 9.0 mL; lakes: .08mL; swamps: .01 mL (about 5 drops); and rivers: 0.002 mL (about 1 drop). • Have students calculate the amount of water left in the bottle to represent the water located in our oceans. Students need to add all of the totals from the cups (29.692 mL) and subtract from 1000. This will tell how much water is remaining in the oceans- 970.3 mL or about 97% of the total water. The 29.692 represents about 3% of the total water on Earth that is fresh water. This 3% is all of the water we have to support life on our planet. from: https://www.denverwater.org/sites/default/files/investigation-3-1-werg.pdf **Activity Ideas:** Please feel free to upload your own ideas and activities to our Schoology folders!

Science Strand: Earth Science 4.ESS.1 ● Earth's surface has specific characteristics and landforms that can be identified.		
Vocabulary:		
Week 2	Essential Questions & Key Ideas/Mini-Lesson Suggestions **Lesson 1**: Water Table from Warren County **Lesson 2**: Effects of glacial movement answer key	**Mentor Texts Provided:** **Additional Activities/Texts:** ● Bruggen Glacier in Chili ● Ohio Glacial Map ● Glaciers Water and Wind Oh My Students rotate through five stations and model five types of erosion in rocks, soils and minerals. They record their observations and discuss the effects of erosion on the planet's landscape. ● Glacier Packet and Answer Key **Activity Ideas:** Please feel free to upload your own ideas and activities to our Schoology folders!

Science Strand: Earth Science 4.ESS.1 • Earth's surface has specific characteristics and landforms that can be identified.		
Vocabulary:		
Week 3	**Essential Questions & Key Ideas/Mini- Lesson Suggestions** **Lesson 1:** Catastrophic events can create landforms- Generation Genius Natural Disasters **Lesson 2:** Catastrophic events can create landforms	**Mentor Texts Provided:** **Additional Activities/Texts:** • Natural Disaster Lesson and Activities • Hawaiian Islands Disappear in Hurricane Video of Hawaiian Islands Disappear in Hurricane • Tolbachik Volcano Google Exploration (can be used with VR googles or chrome book) Kamchatka Peninsula, Russia https://poly.google.com/view/2r7fX3TIu_8 1 - Tolbachik Volcano 2 - Elements in an Eruption 3 - Lava 4 - Reshaping the Land 5 - Why Tolbachik Erupts Russia's Kamchatka Peninsula, which faces Alaska across the Bering Sea, contains a belt of around 160 volcanoes. At least 29 of them are active. In this Expedition, you'll get a close-up look at Tolbachik, one of those active volcanoes, and learn about why this region has so many volcanoes. Available Lesson Plans: Volcanoes & Tolbachik Volcano - https://goo.gl/Fy5pjl • Lava flow from Kilauea Volcano is reforming Hawaii coastline on CBS this morning • Red Cross Disaster Preparedness Program • Shelly Island added to North Carolina Video

- Tsunami Article
- Earthquakes in Ohio
- Generation Genius Extreme Weather Solutions for Kids

Volcanoes Around the World https://poly.google.com/view/fTNmb-8v4Rj

1 - Bromo Tengger Semeru National Park
2 - Karymsky Volcano
3 - Mutnovsky Volcano
4 - Erta Ale Volcano
5 - Dallol Volcano
6 - Kilauea Volcano
7 - Grimsvotn Volcano
8 - Yellowstone Caldera, Yellowstone National Park
9 - Mount Elbrus

Volcanic eruptions have played a major role in Earth's long geographical history and given rise to massive and stunning landforms. Volcanoes have also played roles—rarely benevolent ones—in the myths and legends of cultures around the globe. Today, volcanoes are a subject of scientific study, and they remain a source of nonscientific fascination for

		people everywhere. Join this expedition to get a close-up look at volcanoes in Indonesia, Russia, Ethiopia, Iceland, and the United States. Available Lesson Plans: Identifying Different Types of Volcanoes - https://goo.gl/hNgK8Z • **Activity Ideas:** Please feel free to upload your own ideas and activities to our Schoology folders!
Science Strand: Earth Science 4.ESS.2 • The surface of Earth changes due to weathering.		
Vocabulary:		
Week 4	**Essential Questions & Key Ideas/Mini- Lesson Suggestions**	**Mentor Texts Provided** **Additional Activities/Texts:** Ohio's Scenic Geology

	Lesson 1: Generation Genius Weathering and Erosion **Lesson 2**: Lab on acid rain and effects on different rocks	**Activity Ideas:** Please feel free to upload your own ideas and activities to our Schoology folders!
Science Strand: Earth Science 4.ESS.2 ● The surface of Earth changes due to weathering.		
Vocabulary:		

Week 5	**Essential Questions & Key Ideas/Mini- Lesson Suggestions** **Lesson 1:** Freeze thaw cycle (observation, visual?) **Lesson 2:** Discuss how potholes form	**Mentor Texts Provided:** **Additional Activities/Texts**: **Activity Ideas:** Please feel free to upload your own ideas and activities to our Schoology folders!
Science Strand: Earth Science 4.ESS.2 • The surface of Earth changes due to weathering.		
Vocabulary:		
Week 6	**Essential Questions & Key Ideas/Mini- Lesson Suggestions** **Lesson 1:** Signs of weathering in town/city **Lesson 2**: Signs of weathering in town/city (pictures of local buildings/rivers/roads/etc. Writing piece?)	**Mentor Texts Provided** **Additional Activities/Texts:** **Activity Ideas:** Please feel free to upload your own ideas and activities to our Schoology folders!

Science Strand: Earth Science 4.ESS.2 ● The surface of Earth changes due to weathering.		
Vocabulary:		
Week 7	**Essential Questions & Key Ideas/Mini- Lesson Suggestions** Lesson 1: Recognize all things that can weather rock and soil Lesson 2: Recognize all things that can weather rock and soil	**Mentor Texts Provided:** **Additional Activities/Texts:** **Activity Ideas:** Please feel free to upload your own ideas and activities to our Schoology folders!
Science Strand: Earth Science 4.ESS.3 ● The surface of Earth changes due to erosion and deposition.		
Vocabulary:		
Week 8	**Essential Questions & Key Ideas/Mini- Lesson Suggestions**	**Mentor Texts Provided:** **Additional Activities/Texts:** ● Zoom in an Erosion Specialist. (Melissa Proffit is great!)

End of Quarter 1	**Lesson 1**: Erosion is a process that transports rock, soil, or sediment to a different location Slideshow - Erosion and Deposition **Lesson 2:** Weathering is the breakdown of large rock into smaller pieces of rock (sugar cube lab video) Slideshow - Weathering and Erosion	• Warren County Soil and Water Conservation District Stream Table Presentation • Intro Video about Erosion Weathering and Deposition (3min) • Doodle Notes on Weathering, Erosion and Deposition • Mystery Science Cornmeal Canyons Lab sheet • Erosion Candy Lab • Skittle Erosion Lab Sheet • Types of Erosion • Erosion and Deposition Slide Show • Grand Canyon Article • Grand Canyon Virtual Field Trip Worksheet • Grand Canyon Book Google Exploration (can be used with VR googles or chrome book) Grand Canyon Arizona, United States of America 1 - The Colorado River 2 - The Geological History 3 - The Rocks 4 - The Grand Canyon Skywalk 5 - The Seasons and the Weather 6 - Native Americans, Conservationists, and Tourists https://poly.google.com/view/9usEdXhD2GC **Activity Ideas:** Please feel free to upload your own ideas and activities to our Schoology folders!

Science Strand: Earth Science 4.ESS.2 • The surface of Earth changes due to weathering.		
Vocabulary:		
Week 9	**Essential Questions & Key Ideas/Mini- Lesson Suggestions** **Lesson 1:** Gravity- mudslides, avalanches, landslides - Generation Genius: Gravitational Force **Lesson 2:** Design and test a solution to slow the rate of erosion; investigate different farming or landscape methods that slow erosion	**Mentor Texts Provided:** **Additional Activities/Texts:** • Sandpaper, rock, black paper: sandpaper acts as agents of weathering, rock becomes smoother, rounded corners, sediment left on black paper • Another sugar cube lab • Will a mountain last forever? Mystery Science • Weathering and Erosion Slide Show • Sorting Activity • Effects of Acid Rain Lab Students explore the effect of chemical erosion on statues and monuments. They use chalk to see what happens when limestone is placed in liquids with different pH values. They also learn several engineering approaches to reduce the effects of acid rain. • Physical Maps of World and Continents • Slow Soil Erosion lab • All About Landslides • Landslide Activity **Activity Ideas:** Please feel free to upload your own ideas

		and activities to our Schoology folders!
Science Strand: Earth Science 4.ESS.2 ● The surface of Earth changes due to weathering.		
Vocabulary:		
Week 10	**Essential Questions & Key Ideas/Mini- Lesson Suggestions** **Lesson 1**: Erosion and deposition directly contribute to the formation of landforms (mystery science canyons canyon worksheet wind lab- cookie lab) **Lesson 2**: Aerial photography/ topographic maps to locate erosion and deposition (gallery walk of aerial photos in room 62)	**Mentor Texts Provided:** **Additional Activities/Texts:** ● Slideshow of Landforms ● Landform Project from Columbus City Schools Examine Earth's topography by looking at pictures from space https://visibleearth.nasa.gov/ ● Grand Canyon ● Eastern Sayan Mountains ▪ Crater Lake ▪ Mississippi River Delta (1976 and 2001)

		• Volga Delta (Largest Delta in Europe) • Bruggen Glacier in Chili • Topography Projet • LEGO Topography **Activity Ideas:** Please feel free to upload your own ideas and activities to our Schoology folders!
Science Strand: Earth Science 4.ESS.2 • The surface of Earth changes due to weathering.		
Vocabulary:		
Week 11	**Essential Questions & Key Ideas/Mini- Lesson Suggestions** **Lesson 1:** Cite the importance of erosion Ex: Mississippi river- articles/visuals Possibly debate is erosion good vs bad? **Lesson 2**: Describe the features created by deposition	**Mentor Texts Provided:** **Additional Activities/Texts:** Warren County Soil and Water Conservation District Loan Program **Earth Formations** • Learning Objective: Environmental changes, like weathering or erosion, can be constructive, destructive or even neutral. • Activity: Students visit five stations and conduct erosion, weathering, physical and/or chemical change experiments. **Activity Ideas:** Please feel free to upload your own ideas and activities to our Schoology folders!

Science Strand: Physical Science 4. PS.1 • When objects break into smaller pieces, dissolve, or change state, the total amount of matter is conserved.		
Vocabulary: Quizlet to Vocabulary		
General Resources for Physical Science **https://www.teachengineering.org/** **https://ohioenergy.org/educators**		
Week 12	**Essential Questions & Key Ideas/Mini- Lesson Suggestions** **Lesson 1**: What is matter? (bill nye) Generation Genius Properties of Matter **Lesson 2**: What is matter? (texts, examples, pictures etc.)	**Mentor Texts Provided:** **Additional Activities/ Texts:** **Activity Ideas:** Please feel free to upload your own ideas and activities to our Schoology folders!

Science Strand: Physical Science 4. PS.1 • When objects break into smaller pieces, dissolve, or change state, the total amount of matter is conserved.		
Vocabulary:		
Week 13	**Essential Questions & Key Ideas/Mini- Lesson Suggestions** **Lesson 1**: Solids, Liquids, Gasses, brief phase changes **Lesson 2**: Generation Genius- Conservation of matter	**Mentor Texts Provided/Common Activity:** **Additional Activities/Texts:** • Generation Genius Properties of Matter • Bill Nye Phases of Matter **Activity Ideas:** Please feel free to upload your own ideas and activities to our Schoology folders!
Science Strand: Physical Science 4. PS.1 • When objects break into smaller pieces, dissolve, or change state, the total amount of matter is conserved.		
Vocabulary:		
Week 14	Essential Questions & Key Ideas/Mini-Lesson Suggestions	**Mentor Texts Provided/Common Activity:** **Additional Activities/Texts:**

	Lesson 1: Make and test hypotheses about what will happen to the total mass during many types of changes Ex: paper tearing, salt dissolving, candle burning? **Lesson 2**: Make and test hypotheses about what will happen to the total mass during many types of changes .	**Activity Ideas:** Please feel free to upload your own ideas and activities to our Schoology folders!
Science Strand: Physical Science 4. PS.1 ● When objects break into smaller pieces, dissolve, or change state, the total amount of matter is conserved.		
Vocabulary:		
Week 15	**Essential Questions & Key Ideas/Mini- Lesson Suggestions** **Lesson 1**: Investigate what happens to mass in a closed system when changes occur in a system. Lab with baking soda and balloon **Lesson 2**: Compare the mass of the system before and after the change (ex: measuring play doh and broken apart play doh, ice melting, etc.) lab	**Mentor Texts/Common Activity:** **Additional Activities/Texts:** ● Physical Science Lab Notes Conservation of Mass ● Conservation of Matter Lab Play Doh **Activity Ideas:** Feel free to upload your own ideas

Science Strand: Physical Science 4. PS.1 • When objects break into smaller pieces, dissolve, or change state, the total amount of matter is conserved.		
Vocabulary:		
Week 16	**Essential Questions & Key Ideas/Mini- Lesson Suggestions** **Lesson 1**: Explain that the amount of matter stays constant during any change **Lesson 2:**	**Mentor Texts Provided/Common Activity:** **Additional Activities/Texts:** • Conservation of Matter Generation Genius Lava Lamp • Columbus City Schools Curriculum Balloon over Bottle Lab Balloon Balance Lab Involving Dissolving Sugar Cubes Lab A Whizz at Fizz Lab **Activity Ideas:** Please feel free to upload your own ideas and activities to our Schoology folders!
Science Strand: Physical Science 4. PS.1 • When objects break into smaller pieces, dissolve, or change state, the total amount of matter is conserved.		
Vocabulary:		

Week 17	Essential Questions & Key Ideas/Mini- Lesson Suggestions Lesson 1: Lesson 2:	Mentor Texts Provided/Common Activity: Additional Activities/Texts:
Science Strand: Physical Science 4. PS.2 • Energy can be transferred from one location to another or can be transformed from one form to another.		
Vocabulary:		
Week 18	**Essential Questions & Key Ideas/Mini- Lesson Suggestions** Lesson 1: This is energy transferred between objects and places. (simple circuits lab) Lesson 2: Experiment or video showing how some materials entire object becomes hot when one part becomes hot example pan on a stove vs others remain cool example styrofoam with hot drink	**Mentor Texts Provided/Common Activity:** **Additional Activities/Texts:** • Energy Transfer online • Energy Transfer DIY (S'mores maker) • Solar Bag • Virtual Heat Lab (Explore how heating and cooling iron, brick, water, and olive oil adds or removes energy. See how energy is transferred between objects. Build your own system, with energy sources, changers, and users. Track and visualize how energy flows and changes through your system.)

Science Strand: Physical Science 4. PS.2 • Energy can be transferred from one location to another or can be transformed from one form to another.		
• **Vocabulary:**		
Week 19	**Essential Questions & Key Ideas/Mini- Lesson Suggestions** **Lesson 1:** Difference between thermal and radiant energy- vocabulary sort with pictures (formative assessment) **Lesson 2**: Electrical conductors are materials through which electricity can flow easily (flashlight lab mystery science) Lab Sheet from mystery science	**Mentor Texts Provided/Common Activity:** **Additional Activities/Texts:** • Energy Transfer Worksheet • Thermal Energy pre and post test • Save the Penguins • Energy Math • Energy Fair • Elementary Info Books Energy

Science Strand: Physical Science 4. PS.2 • Energy can be transferred from one location to another or can be transformed from one form to another.		
• **Vocabulary:**		
Week 20	**Essential Questions & Key Ideas/Mini- Lesson Suggestions** Lesson 1: Electrical insulators are materials through which electricity cannot flow easily Lesson 2: Lab testing if materials are insulators or conductors Virtual lab or lab	**Mentor Texts Provided/Common Activity:** **Additional Activities/Texts:** • Power of Circuits Video • Brain pop Electric Circuits • Electric Circuits Quiz Key • How Electric Current Produces Energy • Energy Stick Baton How it works • 5 Circuits Lessons • Circuit Virtual Lab (Build circuits with batteries, resistors, light bulbs, fuses, and switches. Determine if everyday objects are conductors or insulators, and take measurements with a lifelike ammeter and voltmeter. View the circuit as a schematic diagram, or switch to a lifelike view.) • Conductivity Lab • Conductors vs Insulators • Make a light bulb • Ice tray battery • Fruit powered battery • Electric Pickle

Science Strand: Physical Science 4. PS.2 • Energy can be transferred from one location to another or can be transformed from one form to another.		
• **Vocabulary:**		
Week 21	**Essential Questions & Key Ideas/Mini- Lesson Suggestions** Lesson 1: Generation Genius-energy transfer Lesson 2: Electromagnet lab wrap up - what makes it stronger etc	**Mentor Texts Provided/Common Activity:** **Additional Activities/Texts:** • Columbus City Schools Labs • Paper Circuits • Electromagnets • Electricity and Magnetism Lab • Creating an Electromagnet • Wonders of Magnets • Electricity and Magnetism

Science Strand: Physical Science 4. PS.2 • Energy can be transferred from one location to another or can be transformed from one form to another.		
• **Vocabulary:**		
Week 22	**Essential Questions & Key Ideas/Mini- Lesson Suggestions** Lesson 1: Rube goldberg design - include circuits?? (fan create a reaction) Rube Goldberg Intro Lesson 2: Rube goldberg design (writing piece of how to improve) Observation Sheet	**Mentor Texts Provided/Common Activity:** **Additional Activities/Texts:** • Online Activity

Science Strand: Physical Science 4. LS.1 • Changes in an organism's environment are sometimes beneficial to its survival and sometime harmful.		
• **Vocabulary:**		
Week 23	**Essential Questions & Key Ideas/Mini- Lesson Suggestions** Lesson 1: Introduction to environmental changes Lesson 2: Introduction to environmental changes	**Mentor Texts Provided/Common Activity:** • **Digital Biome and Animal Adaptation Jamboard** **Additional Activities/Texts:**

Science Strand: Physical Science 4. LS.1 ● Changes in an organism's environment are sometimes beneficial to its survival and sometime harmful.		
● **Vocabulary:**		
Week 24	**Essential Questions & Key Ideas/Mini- Lesson Suggestions** Lesson 1: Students examine the effects an environmental change ex: deforestation, climate change, fire, drought, flooding, pollution Lesson 2: Students examine the effects an environmental change ex: deforestation, climate change, fire, drought, flooding, pollution	**Mentor Texts Provided/Common Activity:** **Additional Activities/Texts:**

Science Strand: Physical Science 4. LS.1 ● Changes in an organism's environment are sometimes beneficial to its survival and sometime harmful.		
● **Vocabulary:**		
Week 25	**Essential Questions & Key Ideas/Mini- Lesson Suggestions** Lesson 1: Students examine the effects an environmental change ex: deforestation, climate change, fire, drought, flooding, pollution Lesson 2: Students examine the effects an environmental change ex: deforestation, climate change, fire, drought, flooding, pollution	**Mentor Texts Provided/Common Activity:** **Additional Activities/Texts:**

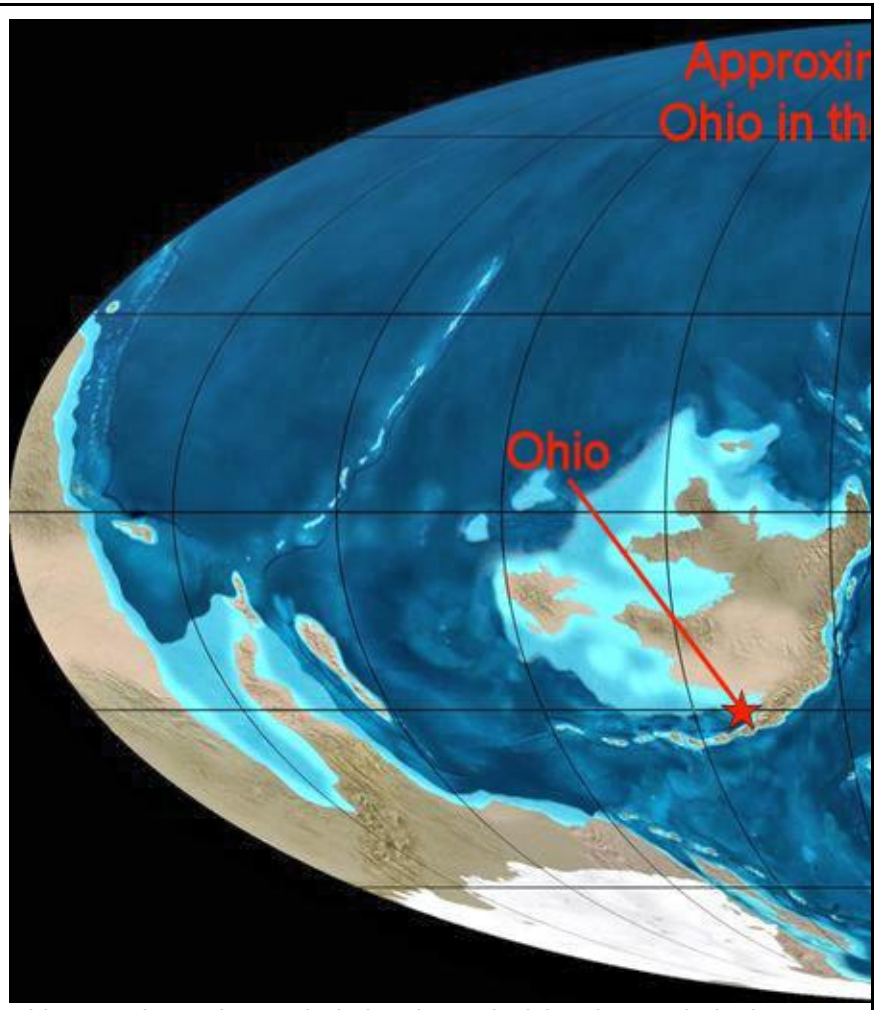
Science Strand: Physical Science 4. LS.1 ● Changes in an organism's environment are sometimes beneficial to its survival and sometime harmful.		
● **Vocabulary:**		
Week 26	**Essential Questions & Key Ideas/Mini- Lesson Suggestions** Lesson 1: Explore the effect of glaciation on our landforms by comparing Northwestern Ohio and Southeastern Ohio Lesson 2: Explain changes that occurred in biotic and abiotic components of local ecosystem. (see Stacy for resources) Example: flooding in morrow and effects of Dam	**Mentor Texts Provided/Common Activity:** **Additional Activities/Texts:**

Science Strand: Physical Science 4. LS.1 • Changes in an organism's environment are sometimes beneficial to its survival and sometime harmful.		
• **Vocabulary: Vocabulary Quizlet**		
Week 27	**Essential Questions & Key Ideas/Mini- Lesson Suggestions** Lesson 1: Present environmental change projects (invite parents? Third grade? Other classes?) Lesson 2: Present environmental change projects	**Mentor Texts Provided/Common Activity:** **Additional Activities/Texts:** **Changes in an organism's environment are sometimes beneficial to its survival and sometimes harmful.** • Change in ecosystems • Making a beehouse and this link • Online Ecosystem game • Ecosystem Choice Board • The endangered species coalition • Endangered sea turtles • Virtually Chat with a Conservationist from the Cincinnati Zoo or other group to a Zoom (about the crew) **Ecosystems can change gradually or dramatically.**

		• Warren County Soil and Water Conservation District Loan program Turdle Hurdles
		  ○ Learning Objective: Ecosystems can change gradually or dramatically as with adaptations of sea turtles.
		  ○ Activity: Students will learn about sea turtles then play a game to see that there are many things that can affect the sea turtle's survival. *Large space needed such as a gymnasium or outdoor field.*
		• Video- 3 minutes and quiz
		When the environment changes, some plants and animals survive and reproduce and others die or move to new locations.
		Google Exploration: Bees and Honey Production use with VR Googles or chromebooks https://poly.google.com/view/7t5RHimmJ7P
		1 -Anatomy of a Bee
		2 -Hive Life
		3 -Collecting Nectar
		4 -Making Honey
		5 -The Importance of Bees
		6 -Protecting Bees
		Bees are one of the most essential animals on the planet. Countless of other species rely on bees in order to survive. Without bees many plants are unable to reproduce. It is estimated that up to 85% of plant crops grown for human consumption is depended on bee pollination. In 2007 a mysterious disease appeared causing mass hive collapses across the world. The US lost 40% of their bee population within the first year of the disease's appearance.
		• The case of the vanishing honeybees: a scientific mystery (book)
		• What if there were no bees?
		• Zoo pollination – zoo bee spotter
		• Ohio's Threatened Species
		• Koala's struggle from fires NatGeo
		Ecosystems are based on interrelationships among and between biotic and abiotic factors.

		These include the diversity of other organisms present, the availability of food and other resources, and the physical attributes of the environment. • Video- 2 minutes and quiz • Generation Genius Video on Ecosystems • Generation Genius Make a Terrarium • What does yeast like to eat Lab and directions • Changes in Ecosystems- living in a different environment • Columbus City Schools Curriculum - The good the bad the beautiful ecosystems - Everything Changes Unit
Science Strand: Physical Science 4. LS.2 • Fossils can be compared to one another and to present day organisms according to their similarities and differences		
• **Vocabulary:**		
Week 28	**Essential Questions & Key Ideas/Mini- Lesson Suggestions** Lesson 1: Create a reconstruction of an extinct animal using information from the fossil record and examples of animals alive today. Lesson 2: Create a reconstruction of an extinct animal using information from the fossil record and examples of animals alive today.	**Mentor Texts Provided/Common Activity:** **Additional Activities/Texts:** • Compare fossils to modern day organisms Google Exploration on Extinction: https://poly.google.com/view/dPWKI8VeSwh Use with VR goggles or Chromebook 1 - Extinction 2 - Why do animals go extinct? 3 - Extinction Timeline 4 - Geological Timeline 5 - Why did the dinosaurs go? 6 - Manmade Extinction 7 - Keystone Species: Honeybee

		When many animals die out and no longer exist, we say that they have become extinct. More than 99% of all the species that ever lived on earth are extinct. Mass extinctions are relatively rare events; however, extinctions of certain species are common. • Fossil Choice Board
Science Strand: Physical Science 4. LS.2 • Fossils can be compared to one another and to present day organisms according to their similarities and differences •		
• **Vocabulary:**		
Week 29	**Essential Questions & Key Ideas/Mini- Lesson Suggestions** Lesson 1: Use resources to identify types of fossils and infer the environmental conditions in which an organism may have existed. Lesson 2: Create and label a poster of a type of fossil and the environment it may have lived (based on inferences from above- group project?) Present reasoning.	**Mentor Texts Provided/Common Activity:** **Additional Activities/Texts:** **Fossils provide a point of comparison between the types of organisms that lived long ago and those existing today.**

		 *This map shows the Earth during the Ordovician time period. The approximate location of Ohio is marked by the star. It sits in a shallow sea along the continent Laurentia (which would become North America). Image modified from: Colorado Plateau Geosystems, Inc. [CC BY-SA 4.0]* •

Science Strand: Physical Science 4. LS.2

- Fossils can be compared to one another and to present day organisms according to their similarities and differences

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• **Vocabulary:**		
Week 30	**Essential Questions & Key Ideas/Mini- Lesson Suggestions** Lesson 1: Classify fossils based on anatomical characteristics and infer behavior patterns and habitats. (sorting activity and writing piece) Lesson 2: Generation Genius - fossils and extinctions Warren County Fossil Experiment?	**Mentor Texts Provided/Common Activity:** **Additional Activities/Texts:** • Ohio fossils • Caesar's Creek Info and this • Cincy Museum video • Slideshow and quiz on fossils Warren County Soil and Water Conservation District Loan program https://www.warrenswcd.com/program-loan-portal.html Fossil Impressions • Learning Objective: Some kinds of individuals that once lived on Earth have completely disappeared, although they were something like others that are alive today. • Activity: Observe fossils from rock layers and make a fossil imprint to take home. ***Teacher must provide Play-doh for class activity* Investigating Fossils • Learning Objective: Fossils provide a point of comparison between the types of organisms that lived long ago and those that exist today. • Activity: Observe fossils from rock layers and compare structures on different fossils through a "mystery" game based on scientific observation! • LaBrea Tar Pits Excavation Video https://youtu.be/rUyhVxxRSjo Virtual Field Trip https://tarpits.org/virtual-field-trip •

Science Strand: Physical Science 4. LS.2

- Fossils can be compared to one another and to present day organisms according to their similarities and differences

- **Vocabulary:**

Week 31	**Essential Questions & Key Ideas/Mini- Lesson Suggestions** Lesson 1: Archeologist dig simulation to understand tools and procedures (toy?) Lesson 2: Write how to steps for dig (tie to ELA sequential order)	**Mentor Texts Provided/Common Activity:** **Additional Activities/Texts:** • Fossil Dig • Fossils PPT • No Bones About it Unit - **Others**

Science Strand: Physical Science 4. LS.2

- Fossils can be compared to one another and to present day organisms according to their similarities and differences
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- **Vocabulary:**

Week 32	**Essential Questions & Key Ideas/Mini- Lesson Suggestions**	**Mentor Texts Provided/Common Activity:**
	Lesson 1: Compare and contrast fossil evidence to show that organisms existing today have similarities to organisms that lived long ago (evolutionary) Lesson 2: Compare and contrast fossil evidence to show that organisms existing today have similarities to organisms that lived long ago (evolutionary)	**Additional Activities/Texts:** Other Google Expeditions VR and Web links: Career Expedition: Paleontologist, Mark Norrell https://poly.google.com/view/bD7v1d_ohMR 1 - Examining Specimen 2 - Examining Specimen Better 3 - Using a microscope 4 - At his computer 5 - Velociraptor Index Specimen 6 - At his desk 7 - Catalog of new samples 8 - New Specimen in Lab A day in the life of a paleontologist. Earth Timeline https://poly.google.com/view/1X7ALEpZfeb 1 - Precambrian Earth 2 - Late Precambrian Earth 3 - The Paleozoic Era 4 - The Late Paleozoic Era 5 - Jurassic Period 6 - Late Jurassic Period 7 - Geological Timeline Our Earth is a fantastic place, covered in mountains, valleys, and rivers, and teeming with all sorts of varied life. However the Earth was not

		always so, and complex life has only existed for the last 12% of the Earth's 4.6 billion years of existence, with humans only being around for 0.006% of that. Fossils https://poly.google.com/view/4gEaj5Wf67o 1 - What is a fossil? 2 - How are Fossils Formed? 3 - Types of Fossils 4 - What is a Paleontologist? 5 - Out in the Field 6 - What We Can Learn From Fossils Fossils are the preserved remains, or traces of animals, plants, and other organisms from the remote past. We can learn a lot about the historical Earth from these remnants. https://poly.google.com/view/3Ikvx7xHDWj 1- The Bernard Family Hall of North American Mammals 2 - Alaskan Brown Bear 3 - Wolves 4 - Hall of Saurischian Dinosaurs 5 - Glen Rose Trackway 6 - Tyrannosaurus rex 7 - Apatosaurus and Allosaurus 8 - Milstein Hall of Ocean Life 9 - Dolphin and Tuna 10 - Walrus The American Museum of Natural History is located on the Upper West Side of Manhattan, New York City and is one of the largest museums in the world. The museum complex comprises 27 interconnected buildings housing 45 permanent exhibition halls, in addition to a planetarium and a library. The museum collections contain over 32 million specimens of plants, humans, animals, fossils, minerals, rocks, meteorites, and human cultural artifacts.

General Resources

The Science Penguin
https://thesciencepenguin.com/science-penguin-resource-library password Peng1

Google Slides
Science - Google Drive

Parent Guide to Science Curriculum (Columbus City Schools)
https://drive.google.com/file/d/1DQ09woxFzRIUtqNEW2aPxeOOBiwLptSU/view

Springdale Curriculum
https://sites.google.com/sdale.org/springdale-science-public/curriculum/4th-grade

Google Explorations
https://docs.google.com/spreadsheets/d/1uwWvAzAiQDueKXkxvqF6rS84oae2AU7eD8bhxzJ9SdY/edit#gid=0

Simulations
https://phet.colorado.edu/en/simulations/category/by-level/middle-schoo

Every Kid in a Park Program
https://everykidoutdoors.gov/index.htm

Science Matters
https://sbsciencematters.com/lesson-units/