CRM 5 Dynamic Earth	**Pacing** • **33 days** • **Jan. 7-Feb. 22** • **Week 18-24**

DESIRED RESULTS

Making Meaning

Concepts in the study of Earth science help explain many changes we observe around us. Investigations in the physical sciences help lay a foundation for students to understand the size, age, construction, and behavior of Earth. In addition, studies in life science are partially rooted in Earth science since Earth is the only planet known to support life. Earth science concepts connect with all the other disciplines and connect the concepts in the other strands of science together. These concepts build a foundation for the study of geology, geological history, geophysics, geochemistry, geobiology, climate change, and environmental sciences. Students build an understanding of the Earth and our place in the solar system and the universe.

The following make meaning valuable for learners and are investigated in this unit:

- Earth is a unique water planet that supports life.
- Earth's surface is constantly changing due to the forces of moving wind, water, and ice.
- Forces below the surface of the Earth cause dramatic, quick changes to Earth's surface.
- Earth produces natural resources that meet the needs of humans and other organisms.
- Earth recycles its materials.
- Humans have an impact on Earth.

Transfer: Students understand that models of the Earth's surface and processes are simplified representations of real objects and processes, and that models serve as a means to communicate ideas and knowledge about how these Earth processes work.

Enduring Understandings:	**Essential Questions:**
• Rock and soil bear evidence of the minerals, temperatures, and forces that created them. • Earth's surface is constantly changing due to forces. • Characteristics of resources make them useful and worth conserving.	• How do rocks and soil tell about Earth's past? • How do forces shape Earth's land? • What makes a natural resource useful?

Essential Vocabulary		**Supporting Vocabulary Link**
• capacity/ capacidad • cave/ cueva • clay/ arcilla, barro • coal/ carbón mineral • compost/abono • decaying plant and animal material / descomposicón de restos de plantas y animales • deposition/ sedimentación • elevation/ elevación • erosion/ erosión • flood/ inundación • fossil fuel/combustible fosíl • glacier/ glaciar	• humus/ humus • loam/ marga • mineral/ mineral • non-renewable resources/ recursos no renovables • nutrients/ nutrientes • particles/ partículas • renewable resources/ recursos renovables • retain/ retener • rock cycle/ ciclo de las rocas • silt/ cieno, limo • waves/ ola • weathering/ degradación, meteorización, desgaste	• Elementary School Supporting Vocabulary

Student Prerequisite Knowledge

Students should know:

- soils are partially formed by the weathering, erosion, and sedimentation of rock material.
- soils are composed of weathered rock, plant and animal remains, and many living organisms.
- soils are large ecosystems that support many living organisms.
- the interior core of Earth is molten.
- heat flow and movement of materials within the Earth cause earthquakes and volcanic eruptions.
- earthquakes and volcanic eruptions create mountains and ocean basins.
- landslides cause rapid changes to Earth's surface.
- there are a variety of different landforms on Earth's surface.
- Earth's surface is constantly being changed and shaped by water, wind, and ice.
- some changes are quick, and some changes take many years to see the change.
- natural resources are found in nature.
- man uses resources to make things for everyday use.
- many resources are reusable and recyclable.
- conservation is necessary to make sure we have enough of these resources.

Resources: Scott Foresman, Science , FOSS: Earth Materials Investigations, AISD Module Kit, STEMScopes, Scientist's Notebook Samples and Resources, Pearson Online Readers

ELPS: Mandated by Texas Administrative Code (19 TAC §74.4), click on the link for English Language Proficiency Standards (ELPS) to support English Language Learners.

TEKS Knowledge & Skills	**Acquisition**	
STAAR: RC = Reporting Category; DC = Dual Coded Skills; **Readiness Standard**; ***Supporting Standard*** ~~Concepts~~ are addressed in another unit.	**Students Will Know**	**Students Will Be Able To**
4.7: Earth and space. The students know that Earth consists of useful resources and its surface is constantly changing. The student is expected to:		
4.7A: examine properties of soils, including color and texture, capacity to retain water, and ability to support the growth of plants.	• Soil is made of particles of rock, the remains of decaying organisms, and living organisms. • Particle and pore size of soil determine texture and ability to retain water. • A soil's ability to support life depends on the amount of organic matter and the ability to retain some but not too much water (mixed particle size). • The soil is a large ecosystem that supports many living organisms. • Soil formation is part of the rock cycle.	• Collect, record, and compare data on soil properties. • Investigate properties of soils. • Test different soils' capacity to retain water and support life.

4.7B: observe and identify slow changes to Earth's surface caused by weathering, erosion, and deposition from water, wind, and ice.	• Understand that forces acting on matter create change. • Waves, wind, water, and ice shape and reshape the Earth's surface by eroding rock and soil in some areas and depositing it in others. • Weathering is the breaking down of rock by water, wind, and ice. • Erosion carries away Earth materials by wind, water, and ice. • Deposition is the process by which eroded earth materials settle out in another place. • A landform is a shape of the land.	• Observe models, investigations, photos, videos and landforms that show how the Earth's surface is changed by moving wind, water, and ice. • Identify and describe the changes that happen slowly over many years. • Rcognize landforms created by moving wind, water, and ice and the time it takes for this to happen. • Explain and identify examples of deposition, weathering, and erosion.
4.7C: identify and classify Earth's renewable resources, including air, plants, water, and animals; and nonrenewable resources, including coal, oil, and natural gas; and the importance of conservation	• Natural resources are found in nature. • Man uses resources to make things for everyday use. • Some resources cannot be reproduced in our lifetime and are classified as nonrenewable. Other resources can be renewed in our lifetime and are classified as renewable. • Resources that are plant and animal based are usually renewable. • Resources that come from the Earth are usually non-renewable. • Conservation is necessary to make sure we have enough of these resources.	• Identify natural resources including air, plants, water and animals. • Classify pictures of resources into renewable and nonrenewable. • Explain the importance of conservation and create a class or home conservation plan.
3.7: Earth and space. The student knows that Earth consists of natural resources and its surface is constantly changing. The student is expected to:		
3.7B: investigate rapid changes in Earth's surface such as volcanic eruptions, earthquakes, and landslides	• Heat flow and movement of materials within the Earth cause earthquakes and volcanic eruptions. • Earthquakes and volcanic eruptions create mountains and ocean basins. • Landslides are caused by gravity and cause rapid change to Earth's surface.	• Investigate rapid changes on Earth's surface. • Investigate volcanic eruptions, earthquakes, and landslides through hands-on investigations.
The study of science is taught through the lens of Scientific Processes (TEKS 4.1-4.4); therefore, these TEKS should be taught in conjunction with content throughout the year. Suggestions for TEKS to embed in each unit are provided in the Yearly Itinerary; however, the TEKS that can be addressed within a unit depends greatly on the learning activities in which students are engaged. Therefore, teachers must be deliberate in their choice of learning activities to ensure that all Scientific Processes TEKS are appropriately embedded within the course. In 4th grade, districts are encouraged to facilitate laboratory and field investigations for at least 60% of instructional time.		

ASSESSMENT EVIDENCE	
Student Work Products/Assessment Evidence	
Performance Tasks	**Other Evidence (i.e. unit tests, open ended exams, quiz, essay, student work samples, observations, etc.)**
Students investigate the following with hands-on labs: • Weathering, erosion, and deposition labs • Water Changes Land • Wind Changes Land • Ice Changes Land • Waves change Land • Rock and Rock Cycle • Soil properties • Soil Retains Water Products: • Resource Classification • Conservation Plan	**Short Cycle Assessment** • *SCA Testing Window: January 28-February 1, 2013* *Tested TEKS: 4.7 B, 3.7B* • *SCA Testing Window: February 25-March 1, 2013* *Tested TEKS: 4.7A, 4.7C* **Additional Suggestions for Assessment** • Student Interactive Notebooks reflections/questions/lab notes • Teacher observations and questioning • Weathering /Erosion/Deposition foldable • Rock types Inspiration Web • Resources graphic organizer

LESSON PLANNING TOOLS
In the course of lesson planning, it is the expectation that teachers will include whole child considerations when planning such as differentiation, special education, English language learning, dual language, gifted and talented, social emotional learning, physical activity, and wellness.
Science Fair 5 Days *Use questions and student interest from the beginning and throughout the year to guide students through a descriptive investigation. If you have made an Inquiry Board to showcase student questions and ideas, validate student thinking with reading and talking about how as a scientist, each of their questions might be answered using scientific investigations. Remember that scientists answer questions in many ways, not just experimental investigations: building models, observations, observations and data collection over time, research and collaboration with other scientists.*
Model Lesson- *Earth Changes* • Forces of Wind, Water and Ice Change Earth's Surface • Earth's Changing Features Optional Review Lesson • STEMscopes 3.7B Suggested Pacing: (9 days) TEKS: 4.7B, 3.7B
Model Lesson- *Rocks and Soil* • Rocks Cycle • Properties of Soil • Testing Soils Suggested Pacing (10 days) TEKS: 4.7A
Model Lesson- *Resources* • Natural Resources • Conservation of Resources Suggested Pacing: (9 days) TEKS: 4.7C