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| **Week** | **Lesson Descriptions** | **Goals**  | **Lesson strategies & resources** |
| 1 | Learning Experience 1: *Earth as a Sphere** Teacher reads aloud: *Journey to the Center of the Earth*
* Students take notes
* Students complete model using paper plate of layers of the Earth

Learning Experience 2: *Layers Surround the Earth** Students observe magnetic fields of magnets, small Earth models and compasses
 | -Introduce names, order and characteristics of Earth’s layers-Students create model of relative sizes of Earth’s Interior-Introduce the magnetosphere as Earth System- Reinforce properties of Magnets (from Grade 2) | * Teacher tip: Journey to the Center of the Earth is long and detailed. Consider omitting the story or adapting it to make it more concise
* Teacher tip: Use excerpts from book, *A Really* *Short History of Nearly Everything,* by Bill Bryson to introduce concepts about Earth’s history
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| 2 | Learning Experience 3: *Features of the Earth’s Crust** Students complete pre-assessment about Earth’s Crust
* Students watch Bill Nye video “Earth’s Crust”
* Students correct pre-assessment based on video

Learning Experience 4: *Earth’s Moving Continents** Student watch video: Continental Drift
* Student model how plates move with playdough
 | - Introduce natural processes that affect the Earth- Introduce the concept of plate tectonics- Use a model to demonstrate how plates move | * Many of the concepts and vocabulary presented in Learning Experiences 3 and 4 are not part of the Massachusetts standards for elementary grades(but are in grade 6-8) and can be omitted or adapted to save time
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| 3 | Learning Experience 5: *Earthquakes** Teacher explains tectonic plates
* Students watch video: *When the Earth Shakes*
* Teacher demonstrates seismic waves using slinkies
 | -Reinforce concept of plate tectonics-Build awareness of Seismic waves | * Many of the concepts and vocabulary presented in Learning Experiences 5 are not in the Massachusetts standards for elementary (but are in grade 6-8) and can be omitted or adapted to save time
* Teacher Tip: Use *Restless Earth,* available as a Big Book to reinforce concepts of volcanoes, earthquakes and other forces that change Earth’s surface
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| 4 | Learning Experience 6: *Mt St. Helens** Teacher reads aloud *Volcano- The Eruption of Mt. St. Helens*
* Students observe Mt. St. Helens ash and images of Mt. St Helens

Learning Experience 7: *Types of Volcanoes** Students observe model volcano
* Students watch 2 videos on Volcanoes
* Students model volcano eruption using baking soda and vinegar in a bag
 | -Students use a model to demonstrate transforming plates-Introduce how a volcano is related to plate tectonics- Introduce models that depict volcano types | * Many of the concepts and vocabulary presented in Learning Experiences 7 are not in the Massachusetts standards for elementary (but are in grade 6-8) and can be omitted or adapted to save time
* Teacher tip: Show video “Should I Stay or Should I go?” showing history of Mt. St Helens eruption in 1980 <http://www.history.com/topics/us-states/washington/videos/mount-st-helens-erupts>
* Teacher tip: use online interactive to introduce volcanoes, includes interactive images and models <http://discoverykids.com/games/volcano-explorer/>
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| 5 | Learning Experience 8: *Weathering: What is it?** Students observe samples of rock
* Teacher reads aloud: *Cracking Up: A Story about Erosion*
* Students watch videos on plate collision, mountain building an Appalachian mountains

Learning Experience 9: *Physical Weathering** Teacher shows power point: *What on Earth is Going On*
* Students investigate the effect of weathering on sugar cubes
 | - Introduce the concept of weathering- Introduce how weathering can change Earth’s surface- Introduce idea that large rocks can become small rocks through weathering-Students practice scientific inquiry (predicting, investigating, drawing conclusions)-Introduce the concept of chemical weathering-Students model chemical weathering | * Many of the concepts and vocabulary presented in Learning Experiences 8(especially around mountain building and plate collisions) are not in the Massachusetts standards for elementary (but are in grade 6-8) and can be omitted or adapted to save time
* Lesson 9 offers opportunity for engaging hands-on experiments and inquiry
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| 6 | Learning Experience 10: *Acid Rain** Students observe photographs of tombstones
* Students experiment with the effect of acid on chalk

Learning Experience 11: *Getting Carried away** Teacher Reads aloud: *Erosion: Changing Earth’s Surface*
* Teacher shows Powerpoint- *Weathering & Erosion*
 | -Introduce the concept of erosion and deposition | * Lesson 11 offers opportunity for engaging hands-on experiments and inquiry
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| 7 | Learning Experience 12: *Earth is a Water Planet** Teacher shows video Earth is a Water Planet
* Students observe world maps looking at oceans
* Students read book: *Ecosystems around the world*
 | -Build awareness that Earth is covered with an interconnected system of waterways-Build awareness that the ocean is largest and most vital of Earth’s ecosystems | * Students can do Ecosystems reading as a jigsaw
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| 9 | Learning Experience 13 *Science Center Field Trip: Stream Tables & Engineering Landslides*- Students experiment with stream tables and work in groups to create model landscapes and engineer ways to stop erosion | -Students observe how a river causes erosion and changes the surface of the land-Students engineer ways to stop erosion-Students practice scientific inquiry (predicting, investigating, drawing conclusions) | * Recommended: Science Center Field Trip: Geology Tour:

On the trip, students visit and observe several landforms getting a glimpse into Needham’s Geologic history. They observe formations (glacial erratics, kettle ponds, volcanic rock) around Needham. They look at evidence of weathering and erosion and review how rocks are formed. |
| 9 |  Learning Experience 14-17*Stream Tables & Engineering Landslides** Students watch video on landslides
* Students create and test model landscapes with stream tables
 | --Students model and observe landslides and how they changes the surface of the land-Students engineer ways to stop erosion-Students practice scientific inquiry (predicting, investigating, drawing conclusions) | * Request stream table materials separately (not delivered in the kit)
* Teacher tip: show students before and after photographs of landslides <http://www.wsj.com/articles/SB10001424052702304679404579461870711140580>
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| 10 | End of Unit Assessments | -Review what students have learned about Changing Earth-Assess what students have learned about Changing Earth |  |