

# Kenilworth Public Schools

## Curriculum Guide

Content Area: Science

Grade: 6

BOE Approved: 7/11/2016

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# Science- Grade 6 Scope and Sequence

Unit 1- Earth's Surface	Unit 2- Ecosystems	Unit 3- Matter	Unit 4- Waves	Unit 5- Earth, Moon and Beyond
Weeks 1-9	Weeks 10-17	Weeks 18-20	Weeks 21-29	Weeks 30-38
<p><i>Unit Description:</i> Rocks change into other types of rocks over time. Natural forces break rocks apart and form soil. Water, wind, and ice shape Earth's surface.</p>	<p><i>Unit Description:</i> Energy flows through ecosystems. Living things within an ecosystem interact with each other and the environment. Humans and human population growth have an effect on the environment.</p>	<p><i>Unit Description:</i> Mixtures are different from solutions. Properties can be used to identify a substance. Physical changes differ from chemical changes.</p>	<p><i>Unit Description:</i> Energy transfers through waves. Waves have properties such as wavelength, frequency, and amplitude. Compare and contrast mechanical waves such as sound waves and light waves.</p>	<p><i>Unit Description:</i> The Earth and the Moon move in predictable ways as they orbit the Sun. The Sun is an important part of our ecosystem.</p>
<p><i>Unit Targets:</i></p> <ul style="list-style-type: none"> <li>• Differentiate between igneous, sedimentary, and metamorphic rocks.</li> <li>• Analyze how one type of rock can turn into another.</li> <li>• Interpret a representation of a rock layer sequence to establish oldest and youngest layers, geologic events and changing events.</li> <li>• Examine Earth's</li> </ul>	<p><i>Unit Targets:</i></p> <ul style="list-style-type: none"> <li>• Describe the role plants play in moving matter through an ecosystem.</li> <li>• Illustrate the flow of energy through a community.</li> <li>• Explain the impact humans have on local and global environments.</li> <li>• Compare and contrast individuals, populations,</li> </ul>	<p><i>Unit Targets:</i></p> <ul style="list-style-type: none"> <li>• Find the volume of an irregular object.</li> <li>• Find the density of an object.</li> <li>• Determine the identity of an unknown substance.</li> <li>• Combine two or more substances and observe the outcomes.</li> </ul>	<p><i>Unit Targets:</i></p> <ul style="list-style-type: none"> <li>• Describe waves in terms of their fundamental properties: wavelength, frequency, and amplitude.</li> <li>• Use the frequency and wavelength to calculate the speed of a wave.</li> <li>• Identify key features of waves such as troughs, crests, and nodes.</li> </ul>	<p><i>Unit Targets:</i></p> <ul style="list-style-type: none"> <li>• Use simulations to generate and evaluate evidence that the Sun's motion across the sky changes in the course of a day and a year.</li> <li>• Construct and evaluate models demonstrating the rotation of the Earth on its axis and the orbit of the Earth around the Sun.</li> <li>• Predict what would</li> </ul>

<p>surface features and identify those created on a scale of human life or on a geologic time scale.</p> <ul style="list-style-type: none"> <li>• Use pictures, videos and maps of landforms to determine if the processes of erosion created them.</li> <li>• Describe methods people use for soil erosion.</li> <li>• Locate areas that are being created (deposition) and destroyed (erosion) using maps and satellite images.</li> </ul>	<p>ecosystems, and communities.</p> <ul style="list-style-type: none"> <li>• Predict the impact that altering biotic and abiotic factors have on an ecosystem.</li> <li>• Describe how one population of organisms may affect other plants and animals in an ecosystem.</li> </ul>		<ul style="list-style-type: none"> <li>• Understand that a mechanical wave travels through a medium.</li> <li>• Describe how different wavelengths of visible light are perceived as different colors.</li> </ul>	<p>happen to an orbiting object if gravity were increased, decreased, or eliminated.</p> <ul style="list-style-type: none"> <li>• Compare and contrast the major physical characteristics of solar system objects using evidence in the form of data tables and photographs.</li> <li>• Compare and contrast solar and lunar eclipses by illustrating each.</li> </ul>
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# Science- Grade 6 Unit 1

<b>Unit Title:</b> Earth's Surface	
<b>Unit Summary:</b> Rocks change into other types of rocks over time. Natural forces break rocks apart and form soil. Water, wind, and ice shape Earth's surface.	
<b>Primary Interdisciplinary Connections:</b> Reading, Writing, Technology	
<b>Career Readiness, Life Literacies, and Key Skills:</b> 9.2, 9.4	
<b>Learning Targets</b>	
<b>NJSLS Standards:</b> MS-ESS2-1, MS-ESS2-2, MS-ESS2-3, MS-ESS2-4	
<b>Computer Science and Design Thinking Standards:</b> 8.1.8.A.3, 8.1.8.B.1	
<b>Climate Change Standards:</b> MS-ESS3-5	
<b>ELA Companion Standards:</b> NJSLSA.R1	
<b>Content Statements:</b>	
1	Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.
2	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.
3	Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.
4	Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.
<b>Big Idea:</b> Rocks change into other types of rocks over time. Natural forces break rocks apart and form soil, which supports life. Water, wind and ice shape the Earth's surface.	
<b>Unit Essential Questions:</b> <ul style="list-style-type: none"> <li>• What affects soil's ability to support animal life and grow plants?</li> <li>• What happens during the rock cycle?</li> <li>• How are different types of rocks formed?</li> <li>• What can we learn from studying the layers of a section of a sedimentary rock?</li> <li>• What types of events influence the current features of the Earth's surface?</li> <li>• How is the Earth's surface shaped?</li> <li>• What is the negative aspect of erosion?</li> </ul>	<b>Unit Enduring Understandings:</b> <ul style="list-style-type: none"> <li>• Soil properties are affected by climate, landforms, and the activities of organisms.</li> <li>• In the rock cycle natural processes form, change, break down and reform rocks.</li> <li>• The order in which rocks move through the rock cycle affects a rocks history.</li> <li>• A piece of sedimentary rock can tell us its age, history, about the changing life forms and the geology of the Earth.</li> <li>• Rapidly occurring events such as earthquakes and volcanic eruptions influence the Earth's surface, as well as slowly occurring events such as mountain building continental drift)</li> </ul>

	<ul style="list-style-type: none"> <li>• Erosion and deposition shape the Earth’s surface, and create Earth’s landforms.</li> <li>• While erosion can help an ecosystem, it can also wash away fertile soil from ecosystems, such as farms.</li> </ul>
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**Unit Learning Targets**

*Students will...*

- Differentiate between igneous, sedimentary, and metamorphic rocks.
- Analyze how one type of rock can turn into another.
- Explain what affects a soil’s ability to support life.
- Interpret a representation of a rock layer sequence to establish oldest and youngest layers, geologic events and changing events.
- Examine Earth’s surface features and identify those created on a scale of human life or on a geologic time scale.
- Use pictures, videos and maps of landforms to determine if the processes of erosion created them.
- Describe methods people use for soil erosion.
- Locate areas that are being created (deposition) and destroyed (erosion) using maps and satellite images.

**Evidence of Learning**

**Summative Assessment:** Chapter tests, End of Unit Projects, experiments

**Formative Assessments:**

- Teacher developed quizzes
- Hands on activities, such as FOSS investigations
- Teacher observation and questioning
- Homework Assignments
- Classwork Assignments
- Exit slips
- Expository writing assignment

**Lesson Plans**

<i>Activities/Interdisciplinary Connections</i>	<i>Timeframe</i>
<ul style="list-style-type: none"> <li>• Connected.com</li> <li>• Draw examples of a rock cycle</li> <li>• Explore particle layers</li> </ul>	9 weeks

<ul style="list-style-type: none"> <li>• Lessons on Merge Cubes</li> <li>• Brain POP video: Weathering</li> <li>• Mini Lab: What are the 3 types of fault motion? P. 118</li> <li>• Mini Lab TE p. 89: “How do plants contribute to the water cycle?”</li> <li>• Launch Lab: “How Can You Describe Earth?” p. 75</li> <li>• Build classroom hydroponic system in a fish tank</li> </ul>	
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<i>Teacher Resources</i>	<i>Teacher Note</i>
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<ul style="list-style-type: none"> <li>• Integrated Science Textbook</li> <li>• Connected.com</li> <li>• Rock History Lesson on Merge Cube</li> <li>• Technology Tools (add/delete as appropriate): <ul style="list-style-type: none"> <li>-Google Classroom</li> <li>-Pear Deck</li> <li>-BrainPOP</li> <li>-FlipGrid</li> <li>-Kahoot</li> <li>-Kami</li> <li>-Quizizz</li> </ul> </li> </ul>	
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**Differentiating Instruction:  
Students with Disabilities, English Language Learners,  
and Gifted & Talented Students**

<p>Examples of Strategies and Practices that Support Students with Disabilities:</p> <ul style="list-style-type: none"> <li>• Use of visual and multisensory formats</li> <li>• Use of assisted technology</li> <li>• Use of prompts</li> <li>• Modification of content and student products</li> <li>• Testing accommodations</li> <li>• Authentic assessments</li> </ul> <p>Examples of Strategies and Practices that Support Gifted &amp; Talented Students:</p> <ul style="list-style-type: none"> <li>• Adjusting the pace of lessons</li> <li>• Curriculum compacting</li> <li>• Inquiry-based instruction</li> <li>• Independent study</li> <li>• Higher-order thinking skills</li> <li>• Interest-based content</li> <li>• Student-driven instruction</li> <li>• Real-world problems and scenarios</li> </ul>
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Examples of Strategies and Practices that Support English Language Learners:

- Pre-teaching of vocabulary and concepts
- Visual learning, including graphic organizers
- Use of cognates to increase comprehension
- Teacher modeling
- Pairing students with beginning English language skills with students who have more advanced English language skills
- Scaffolding
- Word walls
- Sentence frames
- Think-pair-share
- Cooperative learning groups

## Science- Grade 6 Unit 2

<b>Unit Title:</b> Ecosystems	
<b>Unit Summary:</b> Energy flows through ecosystems. Living things within an ecosystem interact with each other and the environment. Humans and human population growth have an effect on the environment.	
<b>Primary Interdisciplinary Connections:</b> Reading, Technology	
<b>Career Readiness, Life Literacies, and Key Skills:</b> 9.2, 9.4	
<b>Learning Targets</b>	
<b>NJSLS Standards:</b> MS-LS2-1, MS-LS2-2, MS-LS2-3	
<b>Computer Science and Design Thinking Standards:</b> 8.1.8.A.3, 8.1.8.B.1	
<b>Climate Change Standards:</b> MS-ESS3-5	
<b>ELA Companion Standards:</b> NJSLSA.R1., NJSLSA.R6.	
<b>Content Statements:</b>	
1	Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
2	Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.
3	Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.
<b>Big Idea:</b> Energy flows through ecosystems. Living things within an ecosystem interact with each other and the environment. Humans and human population growth have an effect on the environment.	
<b>Unit Essential Questions:</b> <ul style="list-style-type: none"> <li>• What role do plants play in the flow of energy through an ecosystem?</li> <li>• How do consumers meet their energy needs?</li> <li>• How do biotic and abiotic factors affect the population of an ecosystem?</li> <li>• Can organisms cause change in an ecosystem?</li> <li>• Can changes in environmental conditions have an effect on organisms living there?</li> <li>• What effect have human's needs and wants had on local and global environments?</li> </ul>	<b>Unit Enduring Understandings:</b> <ul style="list-style-type: none"> <li>• Plants are producers. They use the energy from light to make food from carbon dioxide and water.</li> <li>• Plants are used as a source of energy for other organisms.</li> <li>• All animals are consumers that meet their energy needs by eating other organisms or their products (food chain).</li> <li>• Various human activities can affect environments natural resources, air quality, water quality and biodiversity.</li> <li>• Changes in the biotic and abiotic factors of an ecosystem can alter the number of the living</li> </ul>



	<p>things that an ecosystem can support.</p> <ul style="list-style-type: none"> <li>• Living things within an ecosystem interact with each other and the environment. Some of these interactions can have negative results.</li> </ul>
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**Unit Learning Targets**

*Students will...*

- Describe the role plants play in moving matter through an ecosystem.
- Illustrate the flow of energy through a community.
- Explain the impact humans have on local and global environments.
- Predict the impact that altering biotic and abiotic factors have on an ecosystem.
- Describe how one population of organisms may affect other plants and animals in an ecosystem.

**Evidence of Learning**

**Summative Assessment:** Chapter tests, Projects, Investigations

**Formative Assessments:**

- Teacher developed quizzes
- Hands on activities, such as FOSS investigations
- Teacher observation and questioning
- Homework Assignments
- Classwork Assignments
- Exit slips
- Expository writing assignment

**Lesson Plans**

<i>Activities/Interdisciplinary Connections</i>	<i>Timeframe</i>
<ul style="list-style-type: none"> <li>• Illustrate the food chain</li> <li>• Investigate different types of soil to understand how water flows through different soil types.</li> <li>• FOSS kits</li> <li>• Research activity see TE 330 Invasive plant species</li> <li>• Mini Lab: “How do decomposers recycle nutrients in an ecosystem?” see TE p 335</li> <li>• Inquiry skills practice: “What can analyzing data reveal about predator-prey populations?”</li> <li>• Video: “How wolves change rivers”</li> <li>• Try Engineering Activity: Build an Animal Crossing</li> </ul>	8 weeks
<i>Teacher Resources</i>	<i>Teacher Note</i>

- Connected.com
- Integrated Science Textbook
- Various Lessons on Merge Cube
- Technology Tools (add/delete as appropriate):
  - Google Classroom
  - Pear Deck
  - BrainPOP
  - FlipGrid
  - Kahoot
  - Kami
  - Quizizz

**Differentiating Instruction:  
Students with Disabilities, English Language Learners,  
and Gifted & Talented Students**

Examples of Strategies and Practices that Support Students with Disabilities:

- Use of visual and multisensory formats
- Use of assisted technology
- Use of prompts
- Modification of content and student products
- Testing accommodations
- Authentic assessments

Examples of Strategies and Practices that Support Gifted & Talented Students:

- Adjusting the pace of lessons
- Curriculum compacting
- Inquiry-based instruction
- Independent study
- Higher-order thinking skills
- Interest-based content
- Student-driven instruction
- Real-world problems and scenarios

Examples of Strategies and Practices that Support English Language Learners:

- Pre-teaching of vocabulary and concepts
- Visual learning, including graphic organizers
- Use of cognates to increase comprehension
- Teacher modeling
- Pairing students with beginning English language skills with students who have more advanced English language skills
- Scaffolding
- Word walls
- Sentence frames
- Think-pair-share

•Cooperative learning groups

## Science- Grade 6 Unit 3

<b>Unit Title:</b> Matter	
<b>Unit Summary:</b> Mixtures are different from solutions. Properties can be used to identify a substance. Physical changes differ from chemical changes.	
<b>Primary Interdisciplinary Connections:</b> Reading, Technology, Mathematics	
<b>Career Readiness, Life Literacies, and Key Skills:</b> 9.4	
<b>Learning Targets</b>	
<b>NJSLS Standards:</b> MS-PS1-2, MS-PS 1-3, MS-PS1-4	
<b>Computer Science and Design Thinking Standards:</b> 8.1.8.A.5	
<b>Climate Change Standards:</b> N/A	
<b>ELA Companion Standards:</b> NJSLSA.R1.	
<b>Content Statements:</b>	
1	Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.
2	Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.
3	Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.
<b>Big Idea:</b> A review of matter and an introduction to the properties of matter.	
<b>Unit Essential Questions:</b> <ul style="list-style-type: none"> <li>• How do you find the volume of an irregular object?</li> <li>• How is the density of an object found?</li> <li>• How do you determine an unknown substance?</li> <li>• What happens when you combine two or more substances?</li> </ul>	<b>Unit Enduring Understandings:</b> <ul style="list-style-type: none"> <li>• The volume of an irregular shaped object is determined by using the displacement method.</li> <li>• An objects density is found by dividing the mass of an object by its volume.</li> <li>• The identity of an unknown substance is determined by its intrinsic properties</li> <li>• When you combine two or more substances a new substance is formed that is different from the original substance.</li> </ul>
<b>Unit Learning Targets</b> <i>Students will...</i> <ul style="list-style-type: none"> <li>• Determine the volume of objects using the displacement method.</li> <li>• Calculate the density of an object after determining its mass and volume.</li> <li>• List the physical properties that are used to determine substance.</li> </ul>	

- Differentiate between two unknown substances by using their intrinsic properties.

## Evidence of Learning

**Summative Assessment:** Chapter tests, End of Unit Projects, experiments

**Formative Assessments:**

- Teacher developed quizzes
- Hands on activities, such as FOSS investigations
- Teacher observation and questioning
- Homework Assignments
- Classwork Assignments
- Exit slips
- Expository writing assignment

## Lesson Plans

<i>Activities/Interdisciplinary Connections</i>	<i>Timeframe</i>
<ul style="list-style-type: none"> <li>• ConnectED.com</li> <li>• Foss Kit: Mixtures and Solutions</li> <li>• Students 2Science: Density Rainbow Lab and Curious Crystals</li> <li>• Launch lab TE p. 353 Can you always see the parts of materials?</li> <li>• It's your turn research activity (TE p 364)</li> <li>• Brain POP video • Mini Lab "How can you find the mass of an irregularly shaped object?" TE p. 389</li> </ul>	4 weeks
<i>Teacher Resources</i>	<i>Teacher Note</i>
<ul style="list-style-type: none"> <li>• Integrated Science textbook</li> <li>• Connected.com</li> <li>• Various Lessons on Merge Cube</li> <li>• Technology Tools (add/delete as appropriate):               <ul style="list-style-type: none"> <li>-Google Classroom</li> <li>-Pear Deck</li> <li>-BrainPOP</li> <li>-FlipGrid</li> <li>-Kahoot</li> </ul> </li> </ul>	

-Kami  
-Quizizz

## **Differentiating Instruction: Students with Disabilities, English Language Learners, and Gifted & Talented Students**

Examples of Strategies and Practices that Support Students with Disabilities:

- Use of visual and multisensory formats
- Use of assisted technology
- Use of prompts
- Modification of content and student products
- Testing accommodations
- Authentic assessments

Examples of Strategies and Practices that Support Gifted & Talented Students:

- Adjusting the pace of lessons
- Curriculum compacting
- Inquiry-based instruction
- Independent study
- Higher-order thinking skills
- Interest-based content
- Student-driven instruction
- Real-world problems and scenarios

Examples of Strategies and Practices that Support English Language Learners:

- Pre-teaching of vocabulary and concepts
- Visual learning, including graphic organizers
- Use of cognates to increase comprehension
- Teacher modeling
- Pairing students with beginning English language skills with students who have more advanced English language skills
- Scaffolding
- Word walls
- Sentence frames
- Think-pair-share
- Cooperative learning groups

## Science- Grade 6 Unit 4

<b>Unit Title:</b> Waves	
<b>Unit Summary:</b> Energy transfers through waves. Waves have properties such as wavelength, frequency, and amplitude. Compare and contrast mechanical waves such as sound waves and light waves.	
<b>Primary Interdisciplinary Connections:</b> Reading, Technology	
<b>Career Readiness, Life Literacies, and Key Skills:</b> 9.2	
<b>Learning Targets</b>	
<b>NJSLS Standards:</b> MS-PS4-1, MS-PS4-2	
<b>Computer Science and Design Thinking Standards:</b> 8.1.8.A.5	
<b>Climate Change Standards:</b> N/A	
<b>ELA Companion Standards:</b> NJSLSA.R1.	
<b>Content Statements:</b>	
1	Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy of a wave.
2	Develop and use a model to describe that waves are reflected, absorbed or transmitted through various materials.
<b>Big Idea:</b> Energy is transferred through waves. Sound waves are mechanical waves, but light waves are not. The way light waves behave when they interact with a material affects what we see. The color of an object is determined by the wavelengths it absorbs and those it reflects.	
<b>Unit Essential Questions:</b> <ul style="list-style-type: none"> <li>• What are the characteristic properties and behaviors of waves?</li> <li>• What is light?</li> <li>• How does light interact with an object or material?</li> <li>• How can you predict the path of reflected or refracted light?</li> <li>• What causes an object to be certain color?</li> </ul>	<b>Unit Enduring Understandings:</b> <ul style="list-style-type: none"> <li>• [A simple wave has a repeating pattern with a specific wavelength, frequency, and amplitude.</li> <li>• A sound wave needs a medium through which it is transmitted.</li> <li>• When light shines on an object, it is reflected, absorbed, or transmitted through the object, depending on the object's material and the frequency (color) of the light.</li> <li>• You can determine the path of reflected light by using the Law of Reflection.</li> </ul>
<b>Unit Learning Targets</b> <i>Students will...</i> <ul style="list-style-type: none"> <li>• Comprehend the terms reflection, absorption, and transmission as related to light waves.</li> <li>• Predict the path of light using the Law of Reflection.</li> </ul>	

- Predict the path of refracted light.
- Describe how a prism can be used to demonstrate that visible light from the Sun is made up of different colors.

## Evidence of Learning

**Summative Assessment:** Chapter tests, Projects, Investigations

**Formative Assessments:**

- Teacher observation/ questioning
- Exit slips
- Hands on activities
- Homework Assignments
- Classwork Assignments
- Quizzes
- STEM Investigations from FOSS Kit

## Lesson Plans

<i>Activities/Interdisciplinary Connections</i>	<i>Timeframe</i>
<ul style="list-style-type: none"> <li>• Launch Lab p. 447 “How do waves form?”</li> <li>• Mini Lab p. 451 “How can you make waves with different properties?”</li> <li>• Students2Science: Candy Color Wheel</li> <li>• Brain POP video • “How do waves interact with water?” TE p. 456</li> <li>• FOSS kits: Build a Sound Studio Investigation</li> <li>• FOSS kits: Reflect Lasers off Mirrors Investigation</li> <li>• Slinkys to model mechanical waves</li> </ul>	9 weeks
<i>Teacher Resources</i>	<i>Teacher Note</i>
<ul style="list-style-type: none"> <li>• Connected.com</li> <li>• Integrated Science Chapter 14</li> <li>• FOSS kit</li> <li>• Various Lessons on Merge Cube</li> <li>• Technology Tools (add/delete as appropriate):               <ul style="list-style-type: none"> <li>-Google Classroom</li> <li>-Pear Deck</li> <li>-BrainPOP</li> <li>-FlipGrid</li> <li>-Kahoot</li> </ul> </li> </ul>	



-Kami  
-Quizizz

## **Differentiating Instruction: Students with Disabilities, English Language Learners, and Gifted & Talented Students**

Examples of Strategies and Practices that Support Students with Disabilities:

- Use of visual and multisensory formats
- Use of assisted technology
- Use of prompts
- Modification of content and student products
- Testing accommodations
- Authentic assessments

Examples of Strategies and Practices that Support Gifted & Talented Students:

- Adjusting the pace of lessons
- Curriculum compacting
- Inquiry-based instruction
- Independent study
- Higher-order thinking skills
- Interest-based content
- Student-driven instruction
- Real-world problems and scenarios

Examples of Strategies and Practices that Support English Language Learners:

- Pre-teaching of vocabulary and concepts
- Visual learning, including graphic organizers
- Use of cognates to increase comprehension
- Teacher modeling
- Pairing students with beginning English language skills with students who have more advanced English language skills
- Scaffolding
- Word walls
- Sentence frames
- Think-pair-share
- Cooperative learning groups

## Science- Grade 6 Unit 5

<b>Unit Title:</b> Earth, Moon, and Beyond	
<b>Unit Summary:</b> The Earth and the Moon move in predictable ways as they orbit the Sun. The Sun is an important part of our ecosystem.	
<b>Primary Interdisciplinary Connections:</b> Reading, Technology, Math, Art	
<b>Career Readiness, Life Literacies, and Key Skills:</b> 9.2, 9.4	
<b>Learning Targets</b>	
<b>NJSLS Standards:</b> MS-ESS1-1, MS-ESS1-2	
<b>Computer Science and Design Thinking Standards:</b> 8.1.8.A.3	
<b>Climate Change Standards:</b> MS-ESS3-5	
<b>ELA Companion Standards:</b> NJSLSA.R1., NJSLSA.R6.	
<b>Content Statements:</b>	
1	Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.
2	Develop and use a model of the Earth-Sun-Moon system to describe the cyclic patterns of lunar phases.
<b>Big Idea:</b> The Earth and Moon move in predictable ways around the Sun. The Sun is an important part of the solar system.	
<b>Unit Essential Questions:</b> <ul style="list-style-type: none"> <li>• What causes the seasons on the Earth?</li> <li>• How do the motions of Earth and the Moon affect the Earth?</li> <li>• How do the solar and lunar eclipses differ?</li> </ul>	<b>Unit Enduring Understandings:</b> <ul style="list-style-type: none"> <li>• Seasons are caused by the tilt of Earth’s axis with respect to the Sun.</li> <li>• Earth’s rotation causes day and night. Interactions between the Sun, Earth and Moon cause tides and eclipses.</li> <li>• Solar eclipses only occur during a new moon. A small part of the Earth is in the Moon’s shadow. A lunar eclipse takes place during a full moon. The Earth’s shadow appears to partially or completely cover the Moon.</li> </ul>
<b>Unit Learning Targets</b> <i>Students will...</i> <ul style="list-style-type: none"> <li>• Use simulations to generate and evaluate evidence that the Sun’s motion across the sky changes over the course of a year.</li> <li>• Construct and evaluate models demonstrating the rotation of the Earth on its axis and the orbit of the Earth around the Sun.</li> </ul>	

- Predict what would happen to an orbiting object if gravity were increased, decreased or eliminated.
- Compare and contrast the major physical characteristics of solar system objects using evidence in the form of data tables and photographs.
- Compare and contrast solar and lunar eclipses by illustrating each.

**Evidence of Learning**

**Summative Assessment:** Chapter tests, Projects, experiments

**Formative Assessments:**

- Illustrate solar and lunar eclipses
- Create a model of the solar system.
- FOSS kit- Planetary Science
- Keep a journal of the view of the moon for one month.
- Launch lab see TE 41 “What is the center of the solar system?”
- Brain POP videos
- Mini Lab- “What causes eclipses?” TE p. 47
- Launch Lab “How does rotation affect shape?”

**Lesson Plans**

<i>Activities/Interdisciplinary Connections</i>	<i>Timeframe</i>
<ul style="list-style-type: none"> <li>• Connected.com</li> <li>• Draw examples of a rock cycle</li> <li>• Explore particle layers</li> <li>• Lessons on Merge Cubes</li> <li>• Brain POP video: Weathering</li> <li>• Mini Lab: What are the 3 types of fault motion? P. 118</li> <li>• Mini Lab TE p. 89: “How do plants contribute to the water cycle?”</li> <li>• Launch Lab: “How Can You Describe Earth?” p. 75</li> <li>• Build classroom hydroponic system in a fish tank</li> </ul>	9 weeks
<i>Teacher Resources</i>	<i>Teacher Note</i>
<ul style="list-style-type: none"> <li>• ConnectED.com</li> <li>• Integrated Science Textbook</li> <li>• Kidsastronomy.com</li> <li>• Various Lessons on Merge Cube</li> <li>• Technology Tools (add/delete as appropriate): -Google Classroom</li> </ul>	

-Pear Deck -BrainPOP -FlipGrid -Kahoot -Kami -Quizizz	
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## **Differentiating Instruction: Students with Disabilities, English Language Learners, and Gifted & Talented Students**

Examples of Strategies and Practices that Support Students with Disabilities:

- Use of visual and multisensory formats
- Use of assisted technology
- Use of prompts
- Modification of content and student products
- Testing accommodations
- Authentic assessments

Examples of Strategies and Practices that Support Gifted & Talented Students:

- Adjusting the pace of lessons
- Curriculum compacting
- Inquiry-based instruction
- Independent study
- Higher-order thinking skills
- Interest-based content
- Student-driven instruction
- Real-world problems and scenarios

Examples of Strategies and Practices that Support English Language Learners:

- Pre-teaching of vocabulary and concepts
- Visual learning, including graphic organizers
- Use of cognates to increase comprehension
- Teacher modeling
- Pairing students with beginning English language skills with students who have more advanced English language skills
- Scaffolding
- Word walls
- Sentence frames
- Think-pair-share
- Cooperative learning groups