Quinton Township School District

Science Curriculum Guide

6th Grade

Curriculum MAP **Key: Careers Technology Interdisciplinary Studies**

Marking Period	1	Unit Title	Astronomy	Pacing	40 days

Unit Summary: This unit is broken down into 2 sub-ideas: the universe and its stars, and Earth and the solar system. Students examine the Earth's place in relation to the solar system, the Milky Way galaxy, and the universe. There is a strong emphasis on a systems approach and using models of the solar system to explain the cyclical patterns of eclipses, tides, and seasons. There is also a strong connection to engineering through the instruments and technologies that have allowed us to explore the objects in our solar system and obtain the data that support the theories explaining the formation and evolution of the universe. Students examine geosciences data in order to understand the processes and events in Earth's history. The crosscutting concepts of *patterns*, *scale, proportion, and quantity* and *systems and systems models* provide a framework for understanding the disciplinary core ideas. Students are expected to demonstrate proficiency in *developing and using models* and *analyzing and interpreting data*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Knowledge - By the end of this unit, students will know:

- Scientists hypothesize that the universe began with a "Big Bang."
- Celestial bodies (planets, stars, moons, etc) are formed and are held in orbit by the force of gravity.
- The brightness of a star depends on its distance and size.
- Characteristics of various celestial bodies, including the Sun and the Moon
- What causes the tides, solar/lunar eclipses, and seasons

Skills - By the end of this unit, students will be able to:

- Explain the Big Bang Theory and evidence supporting it
- Identify the factors that determine the strength of gravity and explain gravity's role in our universe
- Describe the makeup of a star and the factors that determine a star's brightness
- Describe the celestial bodies in our solar system
- Explain what effects the motions of the Earth, Sun and Moon have on us (particularly the Tides, Eclipses, and Seasons).

Essential Questions:

1. How did our universe form?
2. What holds our galaxy and solar system together?
3. What determined the brightness of a star, and what are the properties of our Sun?

4. What different types of objects can be found in our solar system?
5. Why do the objects in our solar system follow a curved path around our Sun?
6. What effects do the Moon and Sun have on us here on Earth?

NGSS Standards:

- **MS-ESS1-1 -** Develop and use a model of the Earth-Sun-Moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.
- **MS-ESS1-2 -** Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system
- **MS-ESS1-3 -** Analyze and interpret data to determine scale properties of objects in the solar system.

Interdisciplinary Connections/Including 21st Century Themes and Skills:

English Language Arts/Literacy-

- Cite specific textual evidence to support analysis of science and technical texts. (MS-ESS1-3) **RST.6-8.1**
- Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). (MS-ESS1-3) **RST.6-8.7**
- Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest. (MS-ESS1-1),(MS-ESS1-2) **SL.8.5**

Mathematics

- Reason abstractly and quantitatively. (MS-ESS1-3) **MP.2**
- Model with mathematics. (MS-ESS1-1),(MS-ESS1-2) **MP.4**
- Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. (MS-ESS1-1),(MS-ESS1-2),(MS-ESS1-3) **6.RP.A.1**
- Recognize and represent proportional relationships between quantities. (MS-ESS1-1),(MS-ESS1-2),(MS-ESS1-3) **7.RP.A.2**
- Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set. (MS-ESS1-2) **6.EE.B.6**
- Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. *(MS-ESS1-2)* **7.EE.B.6**

21st Century Themes and Skills

Computer Science and Design Thinking

- 8.2.8.ITH.2: Compare how technologies have influenced society over time

Career Readiness, Life Literacies, and Key Skills

- 9.4.8.IML.1: Critically curate multiple resources to assess the credibility of sources when searching for information.
- 9.4.8.IML.3: Create a digital visualization that effectively communicates a data set using formatting techniques such as form, position, size, color, movement, and spatial grouping
- 9.4.8.TL.3: Select appropriate tools to organize and present information digitally.

Overview of Activities	Teacher's Guide/Resources	Core Instructional Materials	Technology Infusion
1. **The Universe and Its Stars/ Earth and the Solar System Classwork/Homework** 2. **Lab 1: Galaxy Tour** 3. **Lab 2: Gravity Lab** 4. **Lab 3: Apparent Motion of the Stars** 5. **Lab 4: Planet Research** 6. **Lab 5: Solar Distances Activity** 7. **Lab 6: Orbit** 8. **Lab 7: Solar System Revolution** 9. **Lab 8: Eclipses**	1. **The Universe and Its Stars/ Earth and the Solar System Classwork/Homework Answers Guide** 2. **The Universe and Its Stars/ Earth and the Solar System SMART Notebook Notes** 3. **NJCTL.com** 4. **Legends of Learning** 5. **Edpuzzle** 6. **The Universe and Its Stars/ Earth and the Solar System Pacing Guide**	1. **The Universe and Its Stars/ Earth and the Solar System SMART Notebook Notes** 2. **The Universe and Its Stars/ Earth and the Solar System Classwork/Homework** 3. **Labs**	1. **SMARTboard Applications** 2. **Google Applications** 3. **Legends of Learning** 4. **Edpuzzle**

Formative Assessment Plan	Summative Assessment Plan
Formative assessment informs instruction and is on going through a unit to determine how students are progressing with the high expectations of standards. **Suggested activities to assess student progress:** Daily Science Starters Daily/Weekly Classwork & Homework Completion Kahoot! Rubric-for projects Self-reflection	Summative assessment is an opportunity for students to demonstrate mastery of the skills taught during a particular unit. **Final Assessments:** Quiz 1 - Beginning of the Universe/Galaxies Test - The Universe and Its Stars Test Quiz 2 - Birth of the Sun and Solar System Quiz 3 - Types of Celestial Bodies Quiz 4 - Motion of Objects Around the Sun Quiz 5 - The Moon and the Tides Test - Earth and the Solar System Test

Differentiation			
Special Education	**ELL**	**At Risk**	**Gifted and Talented**
• Teacher's aide will read to the students as needed • Students can type or speech to text notes. • The students will be given study guides for tests • Students will be given notes for quizzes • Projects will be modified for students who need it to be. • Homework is also modified for those students who need it. • Students will be given extra time to complete all assignments. • All quizzes and tests have been modified for the students to meet their needs. • Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. • Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling). • Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g.	• Provide ELL students with multiple literacy strategies. • Rosetta Stone • Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. • Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). • Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings. • Translate printed communications for parents in native language • Hold conferences with translator present • Review Special Education listing for additional recommendations	• Teacher's aide will read to the students as needed • Students can type or speech to text notes. • Students will be given extra time to complete all assignments. • Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. • Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). • Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings. • Make modifications to instructional plans based on I and RS Plan.	• Allow students to provide additional support for students struggling (peer teaching) • Expanded learning projects to further student understanding • Student teaching lessons • Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. • Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). • Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings. • Use project-based science learning to connect science with observable phenomena. • Promote self-initiated and self-directed learning and growth. • Enable students to explore continually changing

multiple representation and multimodal experiences). ● Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings. ● Use project-based science learning to connect science with observable phenomena. ● Structure the learning around explaining or solving a social or community-based issue. ● Collaborate with after-school programs or clubs to extend learning opportunities.			knowledge and information and develop the attitude that knowledge is worth pursuing in an open world.

Marking Period	**2**	**Unit Title**	**Earth's Systems**	**Pacing**	**40 days**

Unit Summary: Students examine geoscience data in order to understand processes and events in Earth's history. Important crosscutting concepts in this unit are *scale, proportion, and quantity*, *stability and change*, and *patterns* in relation to the different ways geologic processes operate over geologic time. An important aspect of the history of Earth is that geologic events and conditions have affected the evolution of life, but different life forms have also played important roles in altering Earth's systems. Students understand how Earth's geosystems operate by modeling the flow of energy and cycling of matter within and among different systems. Students investigate the controlling properties of important materials and construct explanations based on the analysis of real geoscience data. Students are expected to demonstrate proficiency in *analyzing and interpreting* data and *constructing explanations*. They are also expected to use these practices to demonstrate understanding of the core ideas.

Knowledge - By the end of this unit, students will know:

- Scientists hypothesize that the universe began with a "Big Bang."
- Celestial bodies (planets, stars, moons, etc) are formed and are held in orbit by the force of gravity.
- The brightness of a star depends on its distance and size.
- Characteristics of various celestial bodies, including the Sun and the Moon
- What causes the tides, solar/lunar eclipses, and seasons

Skills - By the end of this unit, students will be able to:

- Explain the Big Bang Theory and evidence supporting it
- Identify the factors that determine the strength of gravity and explain gravity's role in our universe
- Describe the makeup of a star and the factors that determine a star's brightness
- Describe the celestial bodies in our solar system
- Explain what effects the motions of the Earth, Sun and Moon have on us (particularly the Tides, Eclipses, and Seasons).

Essential Questions:

1. The layers of the Earth
2. The 3 types of rocks
3. The job of paleontologists
4. How we can determine the age of objects found within the Earth
5. Have the Earth's continents always looked the way they do today?
6. What causes Earth's continents to move?
7. In what ways do Earth's plates interact? What happens at these plate boundaries?
8. What causes earthquakes, tsunamis and volcanoes?

NGSS Standards:

- **MS-ESS1-4 -** Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.
- **MS-ESS2-1 -** Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.
- **MS-ESS2-2 -** Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.
- **MS-ESS2-3 -** Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.

Interdisciplinary Connections/Including 21st Century Themes and Skills:

English Language Arts/Literacy-

- Cite specific textual evidence to support analysis of science and technical texts. (MS-ESS1-4),(MS-ESS2-2) **RST.6-8.1**
- Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. (MS-ESS1-4)**,**(MS-ESS2-2) **WHST.6-8.2**
- Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). (MS-ESS2-3) **RST.6-8.7**
- Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic. (MS-ESS2-3) **RST.6-8.9**
- Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest. (MS-ESS2-1),(MS-ESS2-2) **SL.8.5**

Mathematics

- Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. (MS-ESS2-2),(MS-ESS2-3) **7.EE.B.4**
- Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set. (MS-ESS1-4),(MS-ESS2-2),(MS-ESS2-3) **6.EE.B.6**
- Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. (MS-ESS1-4) **7.EE.B.6**
- Reason abstractly and quantitatively. (MS-ESS2-2),(MS-ESS2-3) **MP.2**

21st Century Themes and Skills

Computer Science and Design Thinking

- 8.2.8.ITH.2: Compare how technologies have influenced society over time

Career Readiness, Life Literacies, and Key Skills

- 9.4.8.DC.1: Analyze the resource citations in online materials for proper use.
- 9.4.8.IML.1: Critically curate multiple resources to assess the credibility of sources when searching for information.
- 9.4.8.IML.3: Create a digital visualization that effectively communicates a data set using formatting techniques such as form, position, size, color, movement, and spatial grouping
- 9.4.8.TL.3: Select appropriate tools to organize and present information digitally.

Overview of Activities	Teacher's Guide/Resources	Core Instructional Materials	Technology Infusion
1. **History of Planet Earth/ Plate Tectonics and Natural Disasters Classwork/Homework** 2. **Lab 1: Fossils Layer Webquest** 3. **Lab 2: Cookie Excavation** 4. **Lab 3: Vertebrate Fossil Webquest** 5. **Lab 4: Radiometric Dating** 6. **Lab 5: Tabletop Earthquake** 7. **Lab 6: Tabletop Tsunami** 8. **Lab 7: Tabletop Volcano**	1. **History of Planet Earth/ Plate Tectonics and Natural Disasters Classwork/Homework Answers Guide** 2. **History of Planet Earth/ Plate Tectonics and Natural Disasters SMART Notebook Notes** 3. **NJCTL.com** 4. **Legends of Learning** 5. **Edpuzzle** 6. **The Universe and Its Stars/ Earth and the Solar System Pacing Guide**	1. **History of Planet Earth/ Plate Tectonics and Natural Disasters SMART Notebook Notes** 2. **History of Planet Earth/ Plate Tectonics and Natural Disasters Classwork/Homework** 3. **Labs**	1. **SMARTboard Applications** 2. **Google Applications** 3. **Legends of Learning** 4. **Edpuzzle**

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Formative assessment informs instruction and is on going through a unit to determine how students are progressing with the high expectations of standards. **Suggested activities to assess student progress:** Daily Science Starters Daily/Weekly Classwork & Homework Completion Kahoot! Rubric-for projects Self-reflection	Summative assessment is an opportunity for students to demonstrate mastery of the skills taught during a particular unit. **Final Assessments:** Quiz 1 - Layers of Earth/Rock Cycle Test - History of Planet Earth Test Quiz 2 - Pangaea/Energy Flow Quiz Test - Plate Tectonics and Natural Disasters Test

Differentiation			
Special Education	**ELL**	**At Risk**	**Gifted and Talented**
• Teacher's aide will read to the students as needed • Students can type or speech to text notes. • The students will be given study guides for tests • Students will be given notes for quizzes • Projects will be modified for students who need it to be. • Homework is also modified for those students who need it. • Students will be given extra time to complete all assignments. • All quizzes and tests have been modified for the students to meet their needs.	• Provide ELL students with multiple literacy strategies. • Rosetta Stone • Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. • Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). • Engage students with a variety of Science and Engineering practices to	• Teacher's aide will read to the students as needed • Students can type or speech to text notes. • Students will be given extra time to complete all assignments. • Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. • Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences).	• Allow students to provide additional support for students struggling (peer teaching) • Expanded learning projects to further student understanding • Student teaching lessons • Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. • Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple

• Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. • Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling). • Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). • Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings. • Use project-based science learning to connect science with observable phenomena. • Structure the learning around explaining or solving a social or community-based issue. • Collaborate with after-school programs or clubs to extend learning opportunities.	provide students with multiple entry points and multiple ways to demonstrate their understandings. • Translate printed communications for parents in native language • Hold conferences with translator present • Review Special Education listing for additional recommendations	• Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings. • Make modifications to instructional plans based on I and RS Plan.	representation and multimodal experiences). • Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings. • Use project-based science learning to connect science with observable phenomena. • Promote self-initiated and self-directed learning and growth. • Enable students to explore continually changing knowledge and information and develop the attitude that knowledge is worth pursuing in an open world.

Marking Period	**3**	**Unit Title**	**Weather and Climate**	**Pacing**	**40 days**

Unit Summary: This unit is broken down into two sub-ideas: the roles of water in Earth's surface processes, and weather and climate. Students make sense of how Earth's geosystems operate by modeling the flow of energy and cycling of matter within and among different systems. A systems approach is also important here, examining the feedbacks between systems as energy from the Sun is transferred between systems and circulates through the ocean and atmosphere. The crosscutting concepts of *cause and effect*, *systems and system models*, and *energy and matter* are called out as frameworks for understanding the disciplinary core ideas. In this unit, students are expected to demonstrate proficiency in *developing and using models* and *planning and carrying out investigations* as they make sense of the disciplinary core ideas. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Knowledge - By the end of this unit, students will know:

- Stages of the water cycle, including relevant vocabulary.
- What causes global movement of water.
- How differences in temperature and salinity form a global pattern of currents.
- How weathering and erosion caused by water's movement change the lands features.
- The effect that various factors have on weather and climate.
- How atmospheric and oceanic circulation occurs.
- What probability forecasting is and how it is used.
- What natural disasters are how they are predicted.

Skills - By the end of this unit, students will be able to:

- Describe the water cycle and the forces that drive it.
- Explain the impact of sunlight and gravity on global movements of water.
- Identify the global pattern of interconnected ocean currents.
- Describe the difference between weathering and erosion along with their impact on landforms.
- Describe the effects that factors and locations have on weather and climate.
- Describe how circulation transports heat and moisture around the Earth.
- Translate information on a weather map into a weather forecast.
- Create a weather map based on information.
- Explain how natural disasters can be predicted.

Essential Questions:

1. What is the water cycle?
2. How is water recycled?
3. What effect does sunlight and gravity have on the water cycle?
4. What causes the ocean currents and tides?
5. How does water contribute to weathering and erosion?
6. What factors affect weather and climate?
7. How do meteorologists predict the weather?
8. What are natural disasters and how are they predicted?

NGSS Standards:

- **MS-ESS2-2 -** Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.
- **MS-ESS2-4 -** Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.
- **MS-ESS2-5 -** Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.
- **MS-ESS2-6 -** Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation determine regional climates.
- **MS-ESS3-2 -** Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.

Interdisciplinary Connections/Including 21st Century Themes and Skills:

English Language Arts/Literacy-

- Cite specific textual evidence to support analysis of science and technical texts. (MS-ESS2-5),(MS-ESS3-5) **RST.6-8.1**
- Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic. (MS-ESS2-5) **RST.6-8.9**
- Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation. (MS-ESS2-5) **WHST.6-8.8**
- Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest. (MS-ESS2-6) **SL.8.5**

Mathematics

- Reason abstractly and quantitatively. (MS-ESS2-5),(MS-ESS3-5) **MP.2**
- Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation. (MS-ESS2-5) **6.NS.C.5**
- Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set. (MS-ESS3-5) **6.EE.B.6**

21st Century Themes and Skills

Computer Science and Design Thinking

- 8.2.8.ETW.1: Illustrate how a product is upcycled into a new product and analyze the short- and long-term benefits and costs
- 8.2.8.ETW.3: Analyze the design of a product that negatively impacts the environment or society and develop possible solutions to lessen its impact.
- 8.2.8.ETW.4: Compare the environmental effects of two alternative technologies devised to address climate change issues and use data to justify which choice is best.

Career Readiness, Life Literacies, and Key Skills

- 9.2.8.CAP.10: Evaluate how careers have evolved regionally, nationally, and globally.
- 9.4.8.IML.8: Apply deliberate and thoughtful search strategies to access high-quality information on climate change
- 9.4.8.CI.1: Assess data gathered on varying perspectives on causes of climate change (e.g., crosscultural, gender-specific, generational), and determine how the data can best be used to design multiple potential solutions.

Overview of Activities	Teacher's Guide/Resources	Core Instructional Materials	Technology Infusion
1. **Role of Water in Earth's Surface Processes/ Weather and Climate Classwork/Homework** 2. **Lab 1: Changing Water** 3. **Lab 2: Global Circulation** 4. **Lab 3: Erosion and Weathering** 5. **Lab 4: Ocean Circulation Simulation** 6. **Lab 5: Climate Trends** 7. **Lab 6: Weather Predictions**	1. **Role of Water in Earth's Surface Processes/ Weather and Climate Classwork/Homework Answers Guide** 2. **Role of Water in Earth's Surface Processes/ Weather and Climate SMART Notebook Notes** 3. **NJCTL.com** 4. **Legends of Learning** 5. **Edpuzzle** 6. **Role of Water in Earth's Surface Processes/ Weather and Climate Pacing Guide**	1. **Role of Water in Earth's Surface Processes/ Weather and Climate SMART Notebook Notes** 2. **Role of Water in Earth's Surface Processes/ Weather and Climate Classwork/Homework** 3. **Labs**	1. **SMARTboard Applications** 2. **Google Applications** 3. **Legends of Learning** 4. **Edpuzzle**

Formative Assessment Plan	Summative Assessment Plan
Formative assessment informs instruction and is on going through a unit to determine how students are progressing with the high expectations of standards. **Suggested activities to assess student progress:** Daily Science Starters Daily/Weekly Classwork & Homework Completion Kahoot! Rubric-for projects Self-reflection	Summative assessment is an opportunity for students to demonstrate mastery of the skills taught during a particular unit. **Final Assessments:** Quiz 1 - Water Cycle Quiz 2 - Forces of the Water Cycle/ Global Currents Quiz 3 - Weathering and Erosion Test - Role of Water in Earth's Surface Processes Test Quiz 1 - Sunlight and Circulation Quiz 2 - Geography and Weather Prediction Test - Weather and Climate Test

Differentiation			
Special Education	**ELL**	**At Risk**	**Gifted and Talented**
• Teacher's aide will read to the students as needed • Students can type or speech to text notes. • The students will be given study guides for tests • Students will be given notes for quizzes • Projects will be modified for students who need it to be. • Homework is also modified for those students who need it. • Students will be given extra time to complete all assignments. • All quizzes and tests have been modified for the students to meet their needs. • Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. • Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling). • Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g.	• Provide ELL students with multiple literacy strategies. • Rosetta Stone • Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. • Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). • Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings. • Translate printed communications for parents in native language • Hold conferences with translator present • Review Special Education listing for additional recommendations	• Teacher's aide will read to the students as needed • Students can type or speech to text notes. • Students will be given extra time to complete all assignments. • Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. • Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). • Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings. • Make modifications to instructional plans based on I and RS Plan.	• Allow students to provide additional support for students struggling (peer teaching) • Expanded learning projects to further student understanding • Student teaching lessons • Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. • Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). • Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings. • Use project-based science learning to connect science with observable phenomena. • Promote self-initiated and self-directed learning and growth. • Enable students to explore continually changing

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Marking Period	**3**	**Unit Title**	**Evidence of Common Ancestry**	**Pacing**	**30 days**

Unit Summary: In this unit of study, students analyze graphical displays and gather evidence from multiple sources in order to develop an understanding of how fossil records and anatomical similarities of the relationships among organisms and species describe biological evolution. Students search for patterns in the evidence to support their understanding of the fossil record and how those patterns show relationships between modern organisms and their common ancestors. The crosscutting concepts of *cause and effect, patterns*, and *structure and function* are called out as organizing concepts for these disciplinary core ideas. Students use the practices of *analyzing graphical displays* and *gathering, reading, and communicating information*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Knowledge - By the end of this unit, students will know:

- The different eras of the Phanerozoic Era.
- What fossils are and how fossilization occurs.
- The theory of evolution from a common ancestor.
- Different types of evidence that support evolution from a common ancestor (fossil record, homology, embryological development).

- How natural selection drives evolution.

Skills - By the end of this unit, students will be able to:

- Describe the Paleozoic, Mesozoic and Cenozoic Eras.
- Determine the relative ages of fossils in rock.
- Explain different types of fossils and how fossilization occurs.
- Explain the theory of evolution from a common ancestor.
- Describe different pieces of evidence that support evolution from a common ancestor (fossil record, homology and embryological development).
- Explain how natural selection drives evolution.

Essential Questions:

1. What are fossils and how are they created?
2. What is the geological timeline?
3. What is evolution?
4. What evidence do scientists use to support the theory of evolution from a common ancestor?
5. How does natural selection drive evolution?

NGSS Standards:

- **MS-LS4-1-** Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past.
- **MS-LS4-2-** Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.
- **MS-LS4-3** - Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the full formed anatomy.
- **MS-LS4-4** - Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.
- **MS-LS4-6** - Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.

Interdisciplinary Connections/Including 21st Century Themes and Skills:

English Language Arts/Literacy-

- Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions. (MS-LS4-1),(MS-LS4-2),(MS-LS4-3) **RST.6-8.1**
- Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). (MS-LS4-1),(MS-LS4-3) **RST.6-8.7**
- Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic. (MS-LS4-3) **RST.6-8.9**

- Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. (MS-LS4-2) **WHST.6-8.2**
- Draw evidence from informational texts to support analysis, reflection, and research. (MS-LS4-2) **WHST.6-8.9**
- Engage effectively in a range of collaborative discussions (one-on-one, in groups, teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly. (MS-LS4-2) **SL.8.1**
- Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation. (MS-LS4-2) **SL.8.4**
- Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions. (MS-LS4-4) **RST.6-8.1**
- Compare and contrast the information gained from experiments, simulations, videos, or multimedia sources with that gained from reading a text on the same topic. (MS-LS4-4) **RST.6-8.9**
- Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. (MS-LS4-4) **WHST.6-8.2**
- Draw evidence from informational texts to support analysis, reflection, and research. (MS-LS4-4) **WHST.6-8.9**
- Engage effectively in a range of collaborative discussions (one-on-one, in groups, teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly. (MS-LS4-4) **SL.8.1**
- Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation. (MS-LS4-4) **SL.8.4**

Mathematics

- Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set. (MS-LS4-1),(MS-LS4-2) **6.EE.B.6**
- Model with mathematics. (MS-LS4-6) **MP.4**
- Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. (MS-LS4-4),(MS-LS4-6) **6.RP.A.1**
- Summarize numerical data sets in relation to their context. (MS-LS4-4),(MS-LS4-6) **6.SP.B.5**
- Recognize and represent proportional relationships between quantities. (MS-LS4-4),(MS-LS4-6) **7.RP.A.2**

21st Century Themes and Skills

Computer Science and Design Thinking

- 8.2.8.ITH.1: Explain how the development and use of technology influences economic, political, social, and cultural issues.

Career Readiness, Life Literacies, and Key Skills

- 9.4.8.IML.1: Critically curate multiple resources to assess the credibility of sources when searching for information.
- 9.4.8.IML.15: Explain ways that individuals may experience the same media message differently.
- 9.4.8.IML.14: Analyze the role of media in delivering cultural, political, and other societal messages.
- 9.4.8.IML.13: Identify the impact of the creator on the content, production, and delivery of information
- 9.4.8.IML.10: Examine the consequences of the uses of media
- 9.4.8.IML.9: Distinguish between ethical and unethical uses of information and media

Overview of Activities	Teacher's Guide/Resources	Core Instructional Materials	Technology Infusion
1. Evidence of Common	1. Evidence of Common	1. Evidence of Common	1. SMARTboard

Ancestry Classwork/Homework **2. Lab 1: Geological Timeline** **3. Lab 2: Fossil Cast** **4. Lab 3: Classifying Collage**	**Ancestry Classwork/Homework Answers Guide** **2. Evidence of Common Ancestry SMART Notebook Notes** **3. NJCTL.com** **4. Legends of Learning** **5. Edpuzzle** **6. Evidence of Common Ancestry Pacing Guide**	**Ancestry SMART Notebook Notes** **2. Evidence of Common Ancestry Classwork/Homework** **4. Labs**	**Applications** **2. Google Applications** **3. Legends of Learning** **4. Edpuzzle**

Formative Assessment Plan	Summative Assessment Plan
Formative assessment informs instruction and is on going through a unit to determine how students are progressing with the high expectations of standards. **Suggested activities to assess student progress:** Daily Science Starters Daily/Weekly Classwork & Homework Completion Kahoot! Rubric-for projects Self-reflection	Summative assessment is an opportunity for students to demonstrate mastery of the skills taught during a particular unit. **Final Assessments:** Quiz 1 - Fossils & Fossilization Quiz 2 - Evidence of Evolution Test - Evidence of Evolution Test

Differentiation			
Special Education	**ELL**	**At Risk**	**Gifted and Talented**
● Teacher's aide will read to the students as needed ● Students can type or speech to text notes.	● Provide ELL students with multiple literacy strategies. ● Rosetta Stone ● Structure lessons around questions that are authentic, relate to students' interests,	● Teacher's aide will read to the students as needed ● Students can type or speech to text notes.	● Allow students to provide additional support for students struggling (peer teaching)

● The students will be given study guides for tests ● Students will be given notes for quizzes ● Projects will be modified for students who need it to be. ● Homework is also modified for those students who need it. ● Students will be given extra time to complete all assignments. ● All quizzes and tests have been modified for the students to meet their needs. ● Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. ● Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling). ● Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). ● Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings.	social/family background and knowledge of their community. ● Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). ● Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings. ● Translate printed communications for parents in native language ● Hold conferences with translator present ● Review Special Education listing for additional recommendations	● Students will be given extra time to complete all assignments. ● Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. ● Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). ● Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings. ● Make modifications to instructional plans based on I and RS Plan.	● Expanded learning projects to further student understanding ● Student teaching lessons ● Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. ● Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). ● Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings. ● Use project-based science learning to connect science with observable phenomena. ● Promote self-initiated and self-directed learning and growth. ● Enable students to explore continually changing knowledge and information and develop the attitude that knowledge is worth pursuing in an open world.

• Use project-based science learning to connect science with observable phenomena. • Structure the learning around explaining or solving a social or community-based issue. • Collaborate with after-school programs or clubs to extend learning opportunities.			

Marking Period	**4**	**Unit Title**	**Matter, Energy and Relationships of Organisms in Ecosystems**	**Pacing**	**30 days**

Unit Summary: Students *analyze and interpret data, develop models, construct arguments*, and demonstrate a deeper understanding of the cycling of matter, the flow of energy, and resources in ecosystems. They are able to study patterns of interactions among organisms within an ecosystem. They consider biotic and abiotic factors in an ecosystem and the effects these factors have on populations. They also understand that the limits of resources influence the growth of organisms and populations, which may result in competition for those limited resources. The crosscutting concepts of *matter and energy*, *systems and system models*, *patterns*, and *cause and effect* provide a framework for understanding the disciplinary core ideas. Students demonstrate grade-appropriate proficiency in analyzing and interpret data, developing models, and constructing arguments. Students are also expected to use these practices to demonstrate understanding of the core ideas. Students build on their understandings of the transfer of matter and energy as they study patterns of interactions among organisms within an ecosystem. They consider biotic and abiotic factors in an ecosystem and the effects these factors have on a population. They construct explanations for the interactions in ecosystems and the scientific, economic, political, and social justifications used in making decisions about maintaining biodiversity in ecosystems. The crosscutting concept of *stability and change* provide a framework for understanding the disciplinary core ideas.

This unit includes a two-stage engineering design process. Students first evaluate different engineering ideas that have been proposed using a systematic method, such as a tradeoff matrix, to determine which solutions are most promising. They then test different solutions, and combine the best ideas into a new solution that may be better than any of the preliminary ideas. Students demonstrate grade appropriate proficiency in *asking questions*, *designing solutions, engaging in argument from evidence, developing and using models*, and *designing solutions*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Knowledge - By the end of this unit, students will know:

- The levels of ecological organization.
- The difference between biotic and abiotic factors.

- How competition, predator/prey and mutualism affect populations.
- Various factors that affect population size.
- The roles of producers, consumers and decomposers.
- How energy cycles through an ecosystem.
- How a food web shows the flow of energy.

Skills - By the end of this unit, students will be able to:

- Give examples of the levels of ecology.
- Give examples of competition, predator/prey and mutualism.
- Describe how organisms depend on their environment.
- Explain how population size changes based on various factors.
- Describe the roles of producers, consumers and decomposers.
- Describe the transfer of energy through organisms in a food chain.

Essential Questions:

1. What are the different levels of ecology?
2. What are the factors within an ecosystem?
3. What are the requirements of living things?
4. How do organisms compete for resources?
5. What is the effect of predators in an ecosystem?
6. What are the mutually beneficial relationships in an ecosystem?
7. How is matter and energy transferred in food webs?
8. What is the relationship among producers, consumers, and decomposers?

NGSS Standards:

- **MS-LS2-1**- Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
- **MS-LS2-2**- Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.
- **MS-LS2-3** - Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem
- **MS-LS2-4** - Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
- **MS-LS2-5** -Evaluate competing design solutions for maintaining biodiversity and ecosystem services.*

Interdisciplinary Connections/Including 21st Century Themes and Skills:

English Language Arts/Literacy-

- Cite specific textual evidence to support analysis of science and technical texts. (MS-LS2-1),(MS-LS2-2) **RST.6-8.1**
- Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). (MS-LS2-1) **RST.6-8.7**

- Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. (MS-LS2-2) **WHST.6-8.2**
- Draw evidence from literary or informational texts to support analysis, reflection, and research. (MS-LS2-2) **WHST.6-8.9**
- Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly. (MS-LS2-2) **SL.8.1**
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- Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation. (MS-LS2-2) **SL.8.4**
- Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest. (MS-LS2-3) **SL.8.5**
- Cite specific textual evidence to support analysis of science and technical texts. (MS-LS2-4) **RST.6-8.1**
- Distinguish among facts, reasoned judgment based on research findings, and speculation in a text. (MS-LS2-5) **RST.6-8.8**
- Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims. (MS-LS2-5) **RI.8.8**
- Write arguments to support claims with clear reasons and relevant evidence. (MS-LS2-4),(MS-ETS1-1),(MS-ETS1-3) **WHST.6-8.1**
- Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. (MS-LS2-2) **WHST.6-8.2**
- Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). (MS-ETS1-3) **RST.6-8.7**
- Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation. (MS-ETS1-1) **WHST.6-8.8**
- Draw evidence from literary or informational texts to support analysis, reflection, and research. (MS-LS2-2),(MS-LS2-4),(MS-ETS1-3), (MS-ETS1-2) **WHST.6-8.9**
- Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest. (MS-ETS1-4) **SL.8.5**

Mathematics

- Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. (MS-LS2-3) **6.EE.C.9**
- Summarize numerical data sets in relation to their context. (MS-LS2-2) **6.SP.B.5**
- Reason abstractly and quantitatively. (MS-ETS1-1),(MS-ETS1-3) **MP.2**
- Model with mathematics. (MS-LS2-5) **MP.4**
- Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. (MS-ETS1-1),(MS-ETS1-3) **7.EE.3**
- Use ratio and rate reasoning to solve real-world and mathematical problems. (MS-LS2-5) **6.RP.A.3**

21st Century Themes and Skills

Computer Science and Design Thinking

- 8.2.8.ETW.4: Compare the environmental effects of two alternative technologies devised to address climate change issues and use data to justify which choice is best.

Career Readiness, Life Literacies, and Key Skills

- 9.4.8.IML.8: Apply deliberate and thoughtful search strategies to access high-quality information on climate change

Overview of Activities	Teacher's Guide/Resources	Core Instructional Materials	Technology Infusion
1. Matter, Energy and Relationships of Organisms in EcosystemsClasswork /Homework **2. Lab 1: Breaking it Down Activity** **3. Lab 2: Stranded! Activity** **4. Lab 3:Coral Reef Fish Survey Activity** **5. Lab 4: Desert Food Web Activity**	**1. Matter, Energy and Relationships of Organisms in Ecosystems Classwork/Homework Answers Guide** **2. Matter, Energy and Relationships of Organisms in Ecosystems Notes** **3. NJCTL.com** **4. Legends of Learning** **5. Edpuzzle** **6. Matter, Energy and Relationships of Organisms in Ecosystems Pacing Guide**	**1. Matter, Energy and Relationships of Organisms in Ecosystems SMART Notebook Notes** **2. Matter, Energy and Relationships of Organisms in Ecosystems Classwork/Homework** **3. Labs**	**1. SMARTboard Applications** **2. Google Applications** **3. Legends of Learning** **4. Edpuzzle**

Formative Assessment Plan	Summative Assessment Plan
Formative assessment informs instruction and is on going through a unit to determine how students are progressing with the high expectations of standards. **Suggested activities to assess student progress:** Daily Science Starters Daily/Weekly Classwork & Homework Completion Kahoot! Rubric-for projects Self-reflection	Summative assessment is an opportunity for students to demonstrate mastery of the skills taught during a particular unit. **Final Assessments:** Quiz 1 - Ecology and Ecological Interactions Quiz 2 - Population Dynamics and Food Webs Test - Matter, Energy and Relationships of Organisms in Ecosystems Test

Differentiation			
Special Education	**ELL**	**At Risk**	**Gifted and Talented**
• Teacher's aide will read to the students as needed • Students can type or speech to text notes. • The students will be given study guides for tests • Students will be given notes for quizzes • Projects will be modified for students who need it to be. • Homework is also modified for those students who need it. • Students will be given extra time to complete all assignments. • All quizzes and tests have been modified for the students to meet their needs. • Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. • Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling). • Provide multiple grouping opportunities for students to share their ideas and to encourage work among various	• Provide ELL students with multiple literacy strategies. • Rosetta Stone • Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. • Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). • Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings. • Translate printed communications for parents in native language • Hold conferences with translator present • Review Special Education listing for additional recommendations	• Teacher's aide will read to the students as needed • Students can type or speech to text notes. • Students will be given extra time to complete all assignments. • Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. • Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). • Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings. • Make modifications to instructional plans based on I and RS Plan.	• Allow students to provide additional support for students struggling (peer teaching) • Expanded learning projects to further student understanding • Student teaching lessons • Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. • Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). • Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings. • Use project-based science learning to connect science with observable phenomena. • Promote self-initiated and self-directed learning and growth.

backgrounds and cultures (e.g. multiple representation and multimodal experiences). ● Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings. ● Use project-based science learning to connect science with observable phenomena. ● Structure the learning around explaining or solving a social or community-based issue. ● Collaborate with after-school programs or clubs to extend learning opportunities.			● Enable students to explore continually changing knowledge and information and develop the attitude that knowledge is worth pursuing in an open world.