Barrington Haddon Heights Lawnside Merchantville

School District School District School District School District

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**Course Name: Science**

**Grade: Third Grade**

Board Approved:

\*All curriculum is aligned with the NJSLS in accordance with the Department’s curriculum implementation timeline and includes all required components (NJ.A.C.6A:8).

\*\*Resource and activity lists are compiled from all four districts and may not necessarily be reflected in each district or school.

**Introduction**

#### New Jersey Student Learning Standards for Science

**Michael Heinz, Coordinator**

**Science, engineering, and technology influence and permeate every aspect of modern life. Some knowledge of science and engineering is required to engage with the major public policy issues of today as well as to make informed everyday decisions, such as selecting among alternative medical treatments or determining how to invest public funds for water supply options. In addition, understanding science and the extraordinary insights it has produced can be meaningful and relevant on a personal level, opening new worlds to explore and offering lifelong opportunities for enriching people's lives. In these contexts, learning science is important for everyone, even those who eventually choose careers in fields other than science or engineering.**

**Mission: Scientifically literate individuals possess the knowledge and understanding of scientific concepts and processes required for personal decision-making, participation in civic and cultural affairs, and economic productivity.**

**Vision: The science standards are designed to help realize a vision for education in the sciences and engineering in which students, over multiple years of school, actively engage in scientific and engineering practices and apply crosscutting concepts to deepen their understanding of the core ideas in these fields. The learning experiences provided for students should engage them with fundamental questions about the world and with how scientists have investigated and found answers to those questions. Throughout grades K-12, students should have the opportunity to carry out scientific investigations and engineering design projects related to the disciplinary core ideas (pp. 8-9, NRC, 2012).**

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| **STANDARD:**  **3-ESS2: Earth’s System**  **3-ESS3: Earth and Human Activity** | | |
| **Unit 1: Weather and Climate** | | |
| **ESTABLISHED GOALS (INDICATOR #)** | **TRANSFER (How will this apply to their lives?)** | |
| ESS2-1 Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.  ESS2-2 Obtain and combine information to describe climates in different regions of the world.  ESS2-D Develop a model using an analogy, to describe how weather and climate are related.  ESS3-1 Make a claim about the merits of a design solution that reduces the impacts of a weather-related hazards. | *Students will be able to independently use their knowledge to…*   * Use tables and graphical displays to describe typical weather conditions expected during a particular season. * Obtain and combine information to describe climates in different regions of the world. * Use patterns of weather across different times and areas to predict what weather might happen next. * Make a claim about the merits of a design solution that reduces the impact of a weather related hazard. | |
| **MEANING** | |
| UNDERSTANDINGS:   * Patterns of change can be used to make predictions. * Climate describes the range of an area’s typical weather conditions and the extent to which those conditions vary over the years. * People record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next. * Cause-and-effect relationships are routinely identified, tested, and used to explain change. * Science affects everyday life. * People’s needs and wants change over time, as do their demands for new and improved technologies. * A variety of natural hazards result from natural processes (e.g., *flooding, fast wind, or lightening).* * Humans cannot eliminate natural hazards but can take steps to reduce their impacts. * Engineers improve technologies or develop new ones to increase their benefits (e.g., better artificial limbs), decrease known risks (e.g., seatbelts in cars), and meet societal demands (e.g., cell phones). * Possible solutions to a problem are limited by the available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). * Different proposals for solutions can be compared on the basis of how well each one meets the criteria for success or how well each takes the constraints into account. | ESSENTIAL QUESTIONS:   * *Can we predict the kind of weather that we will see in the spring, summer, autumn, or winter?* * *How can climates in different regions of the world be described?* * *How can we protect people from natural hazards such as flooding, fast wind, or lightening?* |
| **Unit 1: Grade 3- Lessons** | | |
| In this unit of study, students organize and use data to describe typical weather conditions expected during a particular season. They notice patterns as they analyze and interpret weather data, and they use this data to determine cause-and-effect relationships. By applying their understanding of weather-related hazards, students make claims about the merits of a design solution that reduces the impact of such hazards, using evidence to support their claims.  Initially, students learn that scientists record patterns of weather across different times and locations in order to make predictions about future weather conditions. To understand how scientists use weather data, students need time, tools, and resources (both print and digital) to collect weather data. They can use a variety of tools (e.g., thermometers, anemometers, rain gauges) to collect firsthand data and multiple resources (e.g., Weather Bug, NOAA) to gather weather data that has been collected over longer periods of time. Multiple units of measurement (e.g., m, cm, °C, km/hr) should be used when recording weather conditions such as temperature, types and amounts of precipitation, and wind direction and speed. To organize the data they collect, students create graphical displays (bar graphs and pictographs) and tables. Once a sufficient amount of data is collected, students need opportunities to analyze data, looking for patterns of change that can be used to make predictions about typical weather conditions for a particular region and time of year. As they collect and analyze data over time, students learn that certain types of weather tend to occur in a given area and that combinations of weather conditions lead to certain types of weather (e.g., it is always cloudy when it rains or snows, but not all types of clouds bring precipitation).  Weather is a combination of sunlight, wind, precipitation, and temperature in a particular region at a particular time. Climate describes the range of an area's typical weather conditions and the extent to which those conditions vary over the years. After learning to analyze and use data to make weather predictions, students use long-term patterns in weather to describe climates in a variety of regions around the world. To accomplish this, students use books and other reliable media to obtain information and weather data collected over a long period of time for a variety of regions. With guidance, students analyze the available data and information in order to describe the climate (e.g., average temperature, average precipitation, average amount of sunlight) in each region.  Science affects everyday life. Whenever people encounter problems, engineers use scientific knowledge to develop new technologies or improve existing ones to solve our day-to-day problems.  After studying weather and climate, students investigate how weather-related hazards can be reduced. Students learn that there are a variety of natural hazards that result from severe weather. Severe weather, such as high winds, flooding, severe thunderstorms, tornados, hurricanes, ice or snowstorms, dust storms, or drought, has the potential to disrupt normal day-to-day routines and cause damage or even loss of life. While humans cannot eliminate natural hazards, they can take steps to reduce their impact. Students can use trade books and media resources to research types of severe weather hazards and their effects on communities and find examples of how communities solve problems caused by severe weather. As a class, students determine the types of severe weather that are common to the local area and discuss the effects on the community. (Define the problem.) In pairs or small groups, students can research ways that the community reduces the effects of severe weather. (Determine ways in which the problem is solved.) Given criteria, groups can determine how well each solution reduces the effects of severe weather. Groups can also prepare a presentation that  • Describes the solution that the group thinks is best for reducing the effects of a given type of weather hazard,  • Lists evidence to support their thinking, and  • Lists at least one possible constraint, such as materials, time, or cost.  **Introduction to Being a 3rd Grade Scientist Lessons:**  **Lesson 1**: [What is a Scientist?](http://betterlesson.com/lesson/620855/what-is-a-scientist) *SWBAT create and defend their own answer to the question, "What is a scientist?"*  **Lesson 2:** [The Swing Challenge](http://betterlesson.com/lesson/626490/an-introduction-to-problem-solving-the-swing-challenge) (assessment proficiency scale/engineering) *SWBAT work collaboratively to complete a simple "engineering" task and they will describe challenges and successes.*   * [Kid President video: “How to be an Inventor”](https://www.youtube.com/watch?v=75okexRzWMk)   **Lesson 3:** [The Weather House Design and Construction](http://betterlesson.com/lesson/627162/the-weather-house-design-and-construction) *SWBAT solve a simple design problem by building a miniature house with a constrained set of materials which will withstand a particular seasonal weather.*   * [Crash Course Kids:“What’s an Engineer?”](https://www.youtube.com/watch?v=owHF9iLyxic)   **Lesson 4:** [The Weather House Presentation and Writing](http://betterlesson.com/lesson/628023/the-weather-house-collaborative-presentation-and-individual-writing) (assessment proficiency scale/engineering) *SWBAT present and justify how their house is built to survive local weather conditions and they will critique the reasoning of others.*  **Mystery Science Lessons:**  [**Stormy Skies: Weather and Climate**](https://mysteryscience.com/weather/weather-climate)  **Mystery 1:**  Water Cycle, Phases of Matter (Where do clouds come from?)  **Mystery 2:** Local Weather Patterns, Weather Prediction (How can we predict when it’s going to storm?)  **Mystery 3:**  Climate, Geography and Global Weather Patterns (Why are some places always hot?)  **Mystery 4:** Natural Hazards and Engineering (How can you keep a house from blowing away in a windstorm?)  **Suggested BetterLesson Unit: Weather and Climate**  **Lesson 1:** [What is Weather?](http://betterlesson.com/lesson/616162/what-is-weather) Students will discuss what they know about weather and how they think it should be measured.   * [What is Weather? (YouTube)](https://www.youtube.com/watch?v=N8HhcG3BMUk) * [What is Weather (BrainPOP)](https://www.brainpop.com/science/weather/weather/)   **Lesson 2:** [Seasonal Weather (an Introduction)](http://betterlesson.com/lesson/613849/seasonal-weather-an-introduction) *SWBAT use new vocabulary words as they write (pre-assessment) about what they know about the seasons in their location.*  **Lesson 3:** [Summer Storms- Individual Experience](http://betterlesson.com/lesson/618503/summer-storms-individual-experience) *Students will discuss observations of summer weather, focusing on temperature and precipitation.*   * [New Jersey Summer Storm-Wind and rain](https://www.youtube.com/watch?v=9RYZAz7xh38) * [New Jersey Summer Storm-Lightning](https://www.youtube.com/watch?v=z0JSIRcEMsQ) * [Thunderstorms (BrainPOP)](https://www.brainpop.com/science/weather/thunderstorms/) * Proficiency scale (if used)   **Lesson 4:** [Sweltering Summer- Measuring Temperature](http://betterlesson.com/lesson/614830/sweltering-summer-measuring-temperature) *SWBAT discuss characteristics of summer temperatures in their location and around the United States.*   * [Temperature (BrainPOP)](https://jr.brainpop.com/math/measurement/temperature/) * [Humidity (BrainPOP)](https://www.brainpop.com/science/weather/humidity/) * Proficiency scale (if used)   **Lesson 5:** [Summer Storms- Precipitation](http://betterlesson.com/lesson/620229/summer-storms-precipitation)  *Students will examine prior knowledge about precipitation, ask meaningful questions, and develop a model for collecting data.*   * [Cloud types](https://scied.ucar.edu/cloud-types) * [Clouds (BrainPOP)](https://www.brainpop.com/science/weather/clouds/) * [The Water Cycle (BrainPOP)](https://jr.brainpop.com/science/weather/watercycle/) * Proficiency scale (if used)   **Lesson 6:** [Summer Storms- Measuring the Wind](http://betterlesson.com/lesson/619207/summer-storms-measuring-the-wind) *Students will be able to make predictions about seasonal wind and patterns and set up a system for testing their prediction over the course of the school year*.  (proficiency scale)   * [Wind-Billy Nye (YouTube)](https://www.youtube.com/watch?v=uBqohRu2RRk) * [Wind (BrainPOP)](https://www.brainpop.com/science/weather/wind/) * Proficiency scale (if used)   **Lesson 7:** [Collecting Data for One Day of Winter](http://betterlesson.com/lesson/634146/collecting-data-for-one-day-of-winter) *Students will work in groups to collect the high and low temperatures during one day in three different locations in the United States.*  **Lesson 8:** [Estimating Local Rainfall](http://betterlesson.com/lesson/635761/estimating-local-rainfall) *Students will estimate the amount of rainfall that will collect on a rainy day. They will work with inches and practice different ways to use units of measure and analyze data*.  **Lesson 9:** [Comparing Regional Temperatures Day 1](http://betterlesson.com/lesson/629732/comparing-regional-temperatures-day-1) *Students will be make comparisons between the daily high and low temperatures in two different climate regions of the United States.*   * <http://www.timeanddate.com/>   **Lesson 10:** [Comparing Regional Temperatures Day 2](http://betterlesson.com/lesson/633892/comparing-regional-temperatures-day-2) *Students will be make comparisons between the daily high and low temperatures in two different climate regions of the United States.*   * [Seasons (BrainPop)](https://jr.brainpop.com/science/weather/seasons/) * Proficiency scale (if used) | | |
| **Science and Engineering Practices** | **Disciplinary Core Ideas** | **Crosscutting concepts** |
| Planning and Carrying Out Investigations  • Plan and conduct investigations collaboratively to produce evidence to answer a question. (1- PS4-1),(2-LS2-1) Analyzing and Interpreting Data  • Represent data in tables and various graphical displays (bar graphs and pictographs) to reveal patterns that indicate relationships. (3-ESS2-1) Engaging in Argument from Evidence  • Make a claim about the merits of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem. (3-ESS3-1) Obtaining, Evaluating, and Communicating Information  • Obtain and combine information from books and other reliable media to explain phenomena. (3-ESS2-2) | ESS2.D: Weather and Climate  • Scientists record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next. (3-ESS2-1)  • Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years. (3-ESS2-2) ESS3.B: Natural Hazards  • A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts. (3-ESS3-1) (Note: This Disciplinary Core Idea is also addressed by 4-ESS3-2.) | Patterns  • Patterns of change can be used to make predictions. (3-ESS2-1),(3-ESS2-2) Cause and Effect  • Cause and effect relationships are routinely identified, tested, and used to explain change. (3-ESS3-1)  -------------------------------------------------  Connections to Engineering, Technology, and Applications of Science Influence of Engineering, Technology, and Science on Society and the Natural World  • Engineers improve existing technologies or develop new ones to increase their benefits (e.g., better artificial limbs), decrease known risks (e.g., seatbelts in cars), and meet societal demands (e.g., cell phones). (3-ESS3-1) ---------------------------------------------------------------- Connections to Nature of Science Science is a Human Endeavor  • Science affects everyday life. (3-ESS3-1) |
| **District/School Formative Assessment Plan** | | **District/School Summative Assessment Plan** |
| *Part A: Can we predict the kind of weather that we will see in the spring, summer, autumn, or winter?*  *Students who understand the concepts can:*   * Make predictions using patterns of change. * Represent data in tables, bar graphs, and pictographs to reveal patterns that indicate relationships. * Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. *(Assessment of graphical displays is limited to pictographs and bar graphs. Assessment does not include climate change.)*   Examples of data could include:   * + Average temperature   + Precipitation   + Wind direction   Part B: How can climates in different regions of the world be described?  Students who understand the concepts can:  Make predictions using patterns of change.  Obtain and combine information from books and other reliable media to explain phenomena.  Part B: How can we protect people from natural hazards such as flooding, fast wind, or lightening?  Students who understand the concepts can:   * Identify and test cause-and-effect relationships to explain change. * Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem. * Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard. Examples of design solutions to weather related hazards could include: Barriers to prevent flooding Wind-resistant roofs Lightning rods * Define a simple design problem that can be solved through the development of an object, tool, process, or system and include several criteria for success and constraints on materials, time, or cost. * Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.   **Stormy Skies: Weather and Climate:**  [Mystery 1: Water Cycle, Phases of Matter](https://docs.google.com/document/d/1dKcqiiUH0tPmYYGcITP0HvL4fl7lDP3ZwQV82QilvtE/edit?usp=sharing)  [Mystery 2: Local Weather Patterns, Weather Prediction](https://docs.google.com/document/d/17gCgh0l59LEqa8SHNHSAMWeBocPv71siRfAjcsKKUk0/edit?usp=sharing)  [Mystery 3: Climate, Geography, and Global Weather Patterns](https://docs.google.com/document/d/113hLWEEvKYvSKV3mKQXyvbx6NCFLExGWzIsld3J9hQM/edit?usp=sharing)  [Mystery 4: Natural Hazards and Engineering](https://docs.google.com/document/d/1GZb2z-s4wPF-0G5QeY0AFFt4Dve1QfAb2WUBES0VoXc/edit?usp=sharing) | | *Summative assessment is an opportunity for students to demonstrate mastery of the skills taught during a particular unit.*  **Mystery Science Assessments:  *(all resources are accessible on google drive)***  [Stormy Skies: Weather and Climate](https://docs.google.com/document/d/15LsQICWd2jEJVlQ9JNnIjb-lZaHqLmqMFCt-_HtRXdQ/edit?usp=sharing) |
| **Alternative Assessments** | | |
| **Evaluative Criteria** | **Assessment Evidence** | |
| **Suggested Performance Rubric:** Use the following or similar rubric to evaluate students’ performance on lesson assessments:   |  |  | | --- | --- | | **4 - Innovating:** | Advanced understanding and application of the standard | | **3 - Applying:** | Consistently applies skills independently | | **2 - Developing:** | Progressing towards independent application of skills | | **1 - Beginning:** | Early stages of development, need assistance | | Suggested Performance Tasks include but are not limited to:  **(Better Lesson suggestions are referenced above as well.)**  **Performance Task:** [Weather and Climate Lesson 9](http://betterlesson.com/lesson/629732/comparing-regional-temperatures-day-1)  SWBAT: Students will be make comparisons between the daily high and low temperatures in two different climate regions of the United States.  **Performance Task:** [Weather and Climate Lesson 10](http://betterlesson.com/lesson/633892/comparing-regional-temperatures-day-2)  SWBAT: Students will be make comparisons between the daily high and low temperatures in two different climate regions of the United States. | |
| **District/School Texts** | | **District/School Supplementary Resources** |
| Haddon Heights - Unit Kits for Science Labs and References  Lawnside - Houghton Mifflin Harcourt : Science Fusion  Merchantville- Exploring Science (National Geographic Learning) | | **-Scholastic News**  **-Brain POP**  **-NewsELA**  **-Read Works** |
| [**Interdisciplinary Connections**](http://www.state.nj.us/education/cccs/) | | |
| **ELA**  Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-ESS2-2) **RI.3.1**  Compare and contrast the most important points and key details presented in two texts on the same topic. (3-ESS2-2) **RI.3.9**  Write opinion pieces on topics or texts, supporting a point of view with reasons. (3-ESS3-1) **W.3.1**  Conduct short research projects that build knowledge about a topic. (3-ESS3-1) **W.3.7**  Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. | **Math**  Reason abstractly and quantitatively. (3-ESS2-1),(3-ESS2-2),(3-ESS3-1) **MP.2**  Model with mathematics. (3-ESS2-1),(3-ESS2-2), (3-ESS3-1) **MP.4**  Use appropriate tools strategically. (3-ESS2-1) **MP.5**  Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. (3-ESS2-1) **3.MD.A.2**  Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in bar graphs. (3-ESS2-1) **3.MD.B.3** | **Technology**  8.1.5.A.4 - Graph data using a spreadsheet, analyze and produce a report that explains the analysis of the data. |
| **21st Century Skills/Career Education**  CRP2: Apply appropriate academic and technical skills.  CRP4: Communicate clearly and effectively and with reason.  CRP11: Use technology to enhance productivity. |  |  |
| **Modifications and Accommodations** | | |
| **Special Education Students**  Small group  Direct instruction  restate/rephrase  graphic organizers  modified assignments  chunking  leveled text  intentional grouping  read text  extended time  breaks  Teacher records/ student dictates | **English Language Learners**  Labels  word banks  visuals  student friendly definitions  extended time  chunking  intentional grouping | **Students at Risk of School Failure**  leveled text  graphic organizers  modified assignments  kinesthetic activities  restate/rephrase  chunking  intentional grouping |
| **Gifted and Talented**  extension project  leveled text  leadership roles  intentional grouping  Targeted learning from assessment | **Students with 504 Plans**  breaks  chunking  preferential seating  visual reminders  restate/rephrase  check-in/check-out system  visual time  Teacher records/ student dictates |  |
| **Unit Duration: 15** | | |

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| **STANDARD:**  **3-PS2: Motion and Stability: Forces and Interactions** | | |
| **Unit 2: Forces and Motion** | | |
| **ESTABLISHED GOALS (INDICATOR #)** | **TRANSFER (How will this apply to their lives?)** | |
| **3-PS2-1: Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.**  **3-PS2-2: Make observations and/or measurements of an object’s motion to provide evidence that a pattern can be used to predict future motion.** | *Students will be able to independently use their knowledge to…*   * Investigate and provide evidence of the effects of balanced and unbalanced forces on the motion of an object. * Make observations of objectś motion to provide evidence that a pattern can be used to predict future motion. | |
| **MEANING** | |
| UNDERSTANDINGS:   * Science investigations use a variety of methods, tools, and techniques. * Cause-and-effect relationships are routinely identified. * Objects in contact exert forces on each other. * Each force that acts on a particular object has both strength and a direction. * An object at rest typically has multiple forces acting on it, but they add to zero net force on the object. * Forces that do not sum to zero can cause changes in the object’s speed or direction of motion. *(Qualitative and conceptual, but not quantitative, addition of forces are used at this level.)* | ESSENTIAL QUESTIONS:   * *How do scientists play soccer?* * *Can we use patterns that we observed to predict the future?* |
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| **Unit 2: Grade 3 - Lessons** | | |
| In this unit of study, students look for cause-and-effect relationships as they investigate the effects of balanced and unbalanced forces on the motion of an object. They learn that objects in contact exert forces on each other, and these forces have both strength and direction. When the forces are balanced, there is no change in the motion or the position of an object. In other words, an object at rest typically has multiple forces acting on it, but the forces balance out to equal a zero net force on the object. For example, if two children stand with their hands together and push against each other, the pushing force each exerts balances to a net zero effect if neither child moves. Pushing a box from both sides also demonstrates a balanced force if the forces do not produce any change in motion or position of the box.  When the forces are unbalanced, however, there is a change in the motion and/or position of the object the forces are acting on. If the same two children from the example above were pushing against each other, and one child moves his/her hands, arms, or feet forward while the other child moves backward, this would demonstrate an unbalanced force. The first child is pushing with greater force than the second.  Through planning and conducting investigations, students will come to understand that forces that result in changes in an object’s speed or direction of motion are unbalanced. Students can observe everyday examples on the playground, with seesaws and swings and by kicking and throwing soccer balls. As they conduct investigations and make observations, students should identify the cause-and-effect relationships at work and identify the objects that are exerting forces on one another. They should also use qualitative descriptions when identifying the relative strength (greater than, less than, equal) and direction of the forces, even if an object is at rest.  Investigating the effects of forces on objects will also give students opportunities to observe that patterns exist everywhere. Patterns are found in shapes, structures, natural environments, and recurring events. Scientists and engineers analyze patterns to make predictions, develop questions, and create solutions. As students have opportunities to observe forces interacting with objects, they will ask questions and analyze and interpret data in order to identify patterns of change in the motion of objects and to make predictions about an object’s future motion. When students are on the playground, they can observe multiple patterns of change in the back-and-forth motion of a child swinging on a swing or in the up-and-down motion of a seesaw. In the classroom, students can observe a variety of objects, such as marbles rolling back and forth in bowls or tops spinning across the floor.  Throughout this unit, as students plan and carry out investigations, it is extremely important that they routinely identify cause-and-effect relationships and look for patterns of change as objects interact. As students interact with objects, such as when they push a door closed, bounce a ball, or roll a ball down a ramp, they may ask, “What caused the changes that I observed? How can I change the way in which the object moved?” Students need to have many experiences in order to deepen their understanding of the cause-and-effect relationships between balanced and unbalanced forces on the motion of an object, and they should be guided to plan and conduct fair tests, testing only one variable at a time.  **Suggested Mystery Science Lessons:**  [**Invisible Forces: Forces, Motion and Magnets**](https://mysteryscience.com/forces/forces-motion-magnets)  **Mystery 1:** Forces (How could you win a tug-of-war against a bunch of adults? )  **Mystery 2:** Balance of Forces, Engineering (What makes bridges so strong?)  **Mystery 3:** Balance of Forces, Friction (How can you go faster down a slide?)  **Mystery 4:** Magnets, Forces (What can magnets do? )  **Mystery 5:** Magnets and Engineering (How can you unlock a door using a magnet?)  **Suggested Better Lesson Unit: Forces**  **Lesson 1:** [Does it Push or Pull?](http://betterlesson.com/lesson/628015/does-it-push-or-pull) *SWBAT: Make observations of an object’s motion to provide evidence that a pattern can be used to predict future motion by taking pictures/video explaining the force as push or pull.*   * [Position/Motion (BrainPOP)](https://jr.brainpop.com/science/forces/pushesandpulls/)   **Lesson 2:** [Force and Motion Investigation](http://betterlesson.com/lesson/632779/force-and-motion-investigation) *SWBAT: Conduct an investigation collaboratively on the effect of force applied on an object to produce data to serve as the basis for evidence, by using fair tests in which variables are controlled and the number of trials are considered.*  **Lesson 3:** [Rock Climbing, Forces in Motion](http://betterlesson.com/lesson/633298/rock-climbing-forces-in-motion) *SWBAT: Use close reading to make connections between rock climbing and forces and motion.*   * [Rock Climbing- push/pull (YouTube)](https://www.youtube.com/watch?v=5P5akoQ_eNI)   **Lesson 4:** [Cartoon Creations](https://betterlesson.com/lesson/615771/cartoon-creations) *SWBAT: Students will be able to describe the position and changes in position of an object relative to another object or to its' background by creating a cartoon flipbook*   * Proficiency scale (if used) | | |
| **Science and Engineering Practices** | **Disciplinary Core Ideas** | **Crosscutting concepts** |
| Planning and Carrying Out Investigations  • Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered. (3-PS2-1)  • Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution. (3-PS2-2) | PS2.A: Forces and Motion  • Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object’s speed or direction of motion. (Boundary: Qualitative and conceptual, but not quantitative addition of forces are used at this level.) (3-PS2- 1)  • The patterns of an object’s motion in various situations can be observed and measured; when that past motion exhibits a regular pattern, future motion can be predicted from it. (Boundary: Technical terms, such as magnitude, velocity, momentum, and vector quantity, are not introduced at this level, but the concept that some quantities need both size and direction to be described is developed.) (3-PS2-2)  PS2.B: Types of Interactions  • Objects in contact exert forces on each other. (3- PS2-1) | Cause and Effect  • Cause and effect relationships are routinely identified. (3-PS2-1)  Patterns  • Patterns of change can be used to make predictions. (3-PS2-2)  Connections to Nature of Science Science Knowledge is Based on Empirical Evidence  • Science findings are based on recognizing patterns. (3-PS2-2)  Scientific Investigations Use a Variety of Methods  • Science investigations use a variety of methods, tools, and techniques. (3-PS2-1) |
| **District/School Formative Assessment Plan** | | **District/School Summative Assessment Plan** |
| *Students who understand the concepts are able to:*   * Make predictions using patterns of change. * Make observations and/or measurements to produce data to serve as the basis of evidence for an explanation of a phenomenon. * Make observations and/or measurements of an object’s motion to provide evidence that a pattern can be used to predict future motion. *(Assessment does not include technical terms such as period and frequency.) Examples of motion with a predictable pattern could include:* * *A child swinging in a swing.* * *A ball rolling back and forth in a bowl.* * *Two children on a seesaw.*   **Invisible Forces: Forces, Motion and Magnets:**  [Mystery 1: Forces](https://docs.google.com/document/d/1_5HB-MS2Sj1EDwn7iGJhD8DlfOv2aBlyn5L2q_X3Xm0/edit?usp=sharing)  [Mystery 2: Balance of Forces, Engineering](https://docs.google.com/document/d/1ZQ1ioqP5PIc8jYUAtyE0qwhD0GiDzYIWJS7CSj_F-Jc/edit?usp=sharing)  [Mystery 3: Balances of Forces, Friction](https://docs.google.com/document/d/1usY_OVSIK_HqFD2sgOsdoBGY4ZIpVv8ppFJCnDnDgwg/edit?usp=sharing)  [Mystery 4: Magnets, Forces](https://docs.google.com/document/d/1_4_T1VL2kIEw7ibAvyeCCyDuUHCXQiWfGj0YI8ZlA6Q/edit?usp=sharing)  [Mystery 5: Magnets and Engineering](https://docs.google.com/document/d/192UleWMW2vmfwLC44S6eKS3Jknao2w_Afp0TsnQyhmE/edit?usp=sharing) | | *Summative assessment is an opportunity for students to demonstrate mastery of the skills taught during a particular unit.*  **Mystery Science Assessments:**  ***(all resources are accessible on google drive)***  [Invisible Forces: Forces, Motion and Magnets](https://docs.google.com/document/d/1p5WhAIU6gAxDTNT2yATBIXgQYIR3Btlxb8_-2r4_3Yo/edit?usp=sharing) |
| **Alternative Assessments** | | |
| **Evaluative Criteria** | **Assessment Evidence** | |
| **Suggested Performance Rubric:** Use the following or similar rubric to evaluate students’ performance on lesson assessments:   |  |  | | --- | --- | | **4 - Innovating:** | Advanced understanding and application of the standard | | **3 - Applying:** | Consistently applies skills independently | | **2 - Developing:** | Progressing towards independent application of skills | | **1 - Beginning:** | Early stages of development, need assistance | | Suggested Performance Tasks include but are not limited to:  **(Better Lesson suggestions are referenced above as well.)**  **Performance Task:**[Forces and Motion Lesson 2](http://betterlesson.com/lesson/632779/force-and-motion-investigation)  **SWBAT:** Conduct an investigation collaboratively on the effect of force applied on an object to produce data to serve as the basis for evidence, by using fair tests in which variables are controlled and the number of trials are considered | |
| **District/School Texts** | | **District/School Supplementary Resources** |
| Haddon Heights - Unit Kits for Science Labs and References  Lawnside - Houghton Mifflin Harcourt : Science Fusion  Merchantville- Exploring Science (National Geographic Learning) | | **-Scholastic News**  **-Brain POP**  **-NewsELA**  **-Read Works** |
| [**Interdisciplinary Connections**](http://www.state.nj.us/education/cccs/) | | |
| **ELA**  Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. **RI.3.1** (3-PS2-1)  Conduct short research projects that build knowledge about a topic. **W.3.7** (3-PS2-1),(3-PS2-2)  Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. **W.3.8** (3-PS2-1),(3-PS2-2) | **MATH**  Reason abstractly and quantitatively. **MP.2** (3-PS2-1)  Use appropriate tools strategically. **MP.5** (3-PS2-1)  Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. **3.MD.A.2** (3-PS2-1) | **21st Century Skills/Career Education**  CRP2: Apply appropriate academic and technical skills.  CRP4: Communicate clearly and effectively and with reason.  CRP11: Use technology to enhance productivity. |
| **Modifications and Accommodations** | | |
| **Special Education Students**  Small group  Direct instruction  restate/rephrase  graphic organizers  modified assignments  chunking  leveled text  intentional grouping  read text  extended time  breaks  Teacher records/ student dictates | **English Language Learners**  Labels  word banks  visuals  student friendly definitions  extended time  chunking  intentional grouping | **Students at Risk of School Failure**  leveled text  graphic organizers  modified assignments  kinesthetic activities  restate/rephrase  chunking  intentional grouping |
| **Gifted and Talented**  extension project  leveled text  leadership roles  intentional grouping  Targeted learning from assessment | **Students with 504 Plans**  breaks  chunking  preferential seating  visual reminders  restate/rephrase  check-in/check-out system  visual time  Teacher records/ student dictates |  |
| **Unit Duration: 20** | | |

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| **STANDARD:**  **3-PS2: Motion and Stability : Electrical and Magnetic Forces** | | |
| **Unit 3: Electrical and Magnetic Forces** | | |
| **ESTABLISHED GOALS (INDICATOR #)** | **TRANSFER (How will this apply to their lives?)** | |
| **3-PS2-3: Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.**  **3-PS2-4: Define a simple design problem that can be solved by applying scientific ideas about magnets.\*** | *Students will be able to independently use their knowledge to…*   * Determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other. * Identify a simple design problem that can be solved by applying scientific ideas about magnets. | |
| **MEANING** | |
| UNDERSTANDINGS:   * Cause-and-effect relationships are routinely identified, tested, and used to explain change. * Electric and magnetic forces between a pair of objects do not require that objects be in contact. * The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other. | ESSENTIAL QUESTIONS:   * *What are the relationships between electrical and magnetic forces?* * *How can we use our understandings about magnets be used to solve problems?* |
| **Unit 3: Grade 3 - Lessons** | | |
| After investigating electrical and magnetic forces, students will engage in a portion of the engineering design process in order to define a simple design problem that can be solved by applying scientific ideas about magnets. This process should include the following steps:   * As a class, create a list of the properties of magnets. (See content descriptions above) * Brainstorm a list of everyday objects that use magnets, and discuss the function of the magnet(s) in each object. For example, electric can openers have a strong magnet that attaches a can to the device as it cuts through (opens) the top of the can. * In small groups or pairs, students discuss possible everyday problems that might be solved using magnets. For example, they could construct a latch to keep the door shut. * As a class, determine possible criteria that might be used to determine how successful the devices might be, and discuss possible constraints (on materials, time, or cost) that might affect each group’s design solution. * Small groups or pairs should have the opportunity to create a presentation (poster, PowerPoint, drawings, or actual physical model, if time permits) to share both the design problem and solution with the class.   In this unit, students are not expected to build and test their design solutions or to optimize their designs; however, they can compare different proposals for solutions on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. The overall goal is for students to understand that engaging in engineering design will help them understand that scientific discoveries about the natural world can often lead to new and improved technologies, which are developed through the engineering design process, and that as people’s needs and wants change over time, so do their demands for new and improved technologies.  Engineering design is an important part of this unit of study. Students are expected to define a simple design problem that can be solved by applying scientific ideas and determine possible success criteria and constraints on time, materials, and cost. They should also compare different proposals for solutions based on how well the proposed solutions meet the criteria for success or how well each takes the constraints into account.  **Mystery Science Lessons**  [**Invisible Forces: Forces, Motion and Magnets**](https://mysteryscience.com/forces/forces-motion-magnets)  **Mystery 1:** Forces (How could you win a tug-of-war against a bunch of adults? )  **Mystery 2:** Balance of Forces, Engineering (What makes bridges so strong?)  **Mystery 3:** Balance of Forces, Friction (How can you go faster down a slide?)  **Mystery 4:** Magnets, Forces (What can magnets do? )  **Mystery 5:** Magnets and Engineering (How can you unlock a door using a magnet?)  **Suggested BetterLesson Unit:**  **Lesson 1:** [Magnetism Exploration](http://betterlesson.com/lesson/638686/magnetism-exploration) *Students will be able to identify objects that are attracted or repelled by magnetism.*   * [Magnets (BrainPOP)](https://jr.brainpop.com/science/forces/magnets/)   **Lesson 2:** [Magnetic Attraction](http://betterlesson.com/lesson/639000/magnetic-attraction) *Students will be able to categorize objects based on their attraction to magnetic forces and engage in scientific discourse regarding their findings.*  **Lesson 3:** [Magnet Investigations](http://betterlesson.com/lesson/638687/magnet-investigations) *Students will be able to determine if a magnetic force can travel through space and time.*   * Proficiency scale (if used)   **Lesson 4:** [May the Force Be With You!](http://betterlesson.com/lesson/636432/may-the-force-be-with-you) *Students will be able to determine how to interrupt the force of magnetism and measure the force of magnetism*.   * [Magnetism (BrainPOP)](https://www.brainpop.com/science/motionsforcesandtime/magnetism/)   **Lesson 5:** [It's Only Temporary!](http://betterlesson.com/lesson/639707/it-s-only-temporary) *Students will be able to create a temporary magnet.*   * [Electromagnetic Induction (BrainPOP)](https://www.brainpop.com/technology/energytechnology/electromagneticinduction/)   **Lesson 6:** [Location, Location, Location!](http://betterlesson.com/lesson/639708/location-location-location) *Students will be able to use different tools to locate a magnetic field.*   * [Bill Nye- Magnetism (YouTube)](https://www.youtube.com/watch?v=fMXiQEXWBP4)   **Lesson 7:** [I Need a Magnet!](http://betterlesson.com/lesson/639709/i-need-a-magnet) *Students will be able to use their knowledge of magnetism to solve a problem or respond to a situation.(*Suggested performance task) | | |
| **Science and Engineering Practices** | **Disciplinary Core Ideas** | **Crosscutting concepts** |
| Analyzing and Interpreting Data  • Analyze and interpret data to make sense of phenomena using logical reasoning. (3-LS3-1) Asking Questions and Defining Problems  • Ask questions that can be investigated based on patterns such as cause and effect relationships. (3-PS2-3)  • Define a simple problem that can be solved through the development of a new or improved object or tool. (3-PS2-4)  • Define a simple design problem that can be solved through the development of an object, tool, process, or system and includes several criteria for success and constraints on materials, time, or cost. (3-5-ETS1-1) | PS2.B: Types of Interactions  • Electric and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other. (3-PS2-3),(3-PS2-4) ETS1.  A: Defining and Delimiting Engineering Problems  • Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. (3- 5-ETS1-1) | Cause and Effect  • Cause and effect relationships are routinely identified, tested, and used to explain change. (3- PS2-3)  - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -  Connections to Engineering, Technology, and Applications of Science Interdependence of Science, Engineering, and Technology  • Scientific discoveries about the natural world can often lead to new and improved technologies, which are developed through the engineering design process. (3-PS2-4) |
| **District/School Formative Assessment Plan** | | **District/School Summative Assessment Plan** |
| ***Part A:*** *What are the relationships between electrical and magnetic forces?*  *Students who understand the concepts are able to:*   * Identify and test cause-and-effect relationships in order to explain change. * Ask questions that can be investigated based on patterns such as cause-and-effect relationships. * Ask questions to determine cause-and-effect relationships in electric or magnetic interactions between two objects not in contact with each other. *(Assessment is limited to forces produced by objects that can be manipulated by students, and electrical interactions are limited to static electricity.)* * Magnetic forces could include: * The force between two permanent magnets; * The force between an electromagnet and steel paper clips; * The force exerted by one magnet versus the force exerted by two magnets. * Cause-and-effect relationships could include: * How the distance between objects affects the strength of the force * How the orientation of magnets affects the direction of the magnetic force.   **Part B:** *How can we use our understandings about magnets be used to solve problems?*  *Students who understand the concepts are able to:*   * Define a simple problem that can be solved through the development of a new or improved object or tool. * Define a simple design problem that can be solved by applying scientific ideas * about magnets (e.g., constructing a latch to keep the door shut or creating a device to keep two moving objects from touching each other). * Define a simple design problem that can be solved through the development of an object, tool, process, or system, and include several criteria for success and constraints on material, time, or cost. * Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.   Invisible Forces: Forces, Motion and Magnets:  [Mystery 1: Forces](https://docs.google.com/document/d/1_5HB-MS2Sj1EDwn7iGJhD8DlfOv2aBlyn5L2q_X3Xm0/edit?usp=sharing)  [Mystery 2: Balance of Forces, Engineering](https://docs.google.com/document/d/1ZQ1ioqP5PIc8jYUAtyE0qwhD0GiDzYIWJS7CSj_F-Jc/edit?usp=sharing)  [Mystery 3: Balances of Forces, Friction](https://docs.google.com/document/d/1usY_OVSIK_HqFD2sgOsdoBGY4ZIpVv8ppFJCnDnDgwg/edit?usp=sharing)  [Mystery 4: Magnets, Forces](https://docs.google.com/document/d/1_4_T1VL2kIEw7ibAvyeCCyDuUHCXQiWfGj0YI8ZlA6Q/edit?usp=sharing)  [Mystery 5: Magnets and Engineering](https://docs.google.com/document/d/192UleWMW2vmfwLC44S6eKS3Jknao2w_Afp0TsnQyhmE/edit?usp=sharing) | | *Summative assessment is an opportunity for students to demonstrate mastery of the skills taught during a particular unit.*  **Mystery Science Assessments:**  ***(all resources are accessible on google drive)***  [Invisible Forces: Forces, Motion and Magnets](https://docs.google.com/document/d/1p5WhAIU6gAxDTNT2yATBIXgQYIR3Btlxb8_-2r4_3Yo/edit?usp=sharing) |
| **Alternative Assessments** | | |
| **Evaluative Criteria** | **Assessment Evidence** | |
| **Suggested Performance Rubric:** Use the following or similar rubric to evaluate students’ performance on lesson assessments:   |  |  | | --- | --- | | **4 - Innovating:** | Advanced understanding and application of the standard | | **3 - Applying:** | Consistently applies skills independently | | **2 - Developing:** | Progressing towards independent application of skills | | **1 - Beginning:** | Early stages of development, need assistance | | Suggested Performance Tasks include but are not limited to:  **(Better Lesson suggestions are referenced above as well.)**  **Performance Task:** [I Need a Magnet!](http://betterlesson.com/lesson/639709/i-need-a-magnet)  *Students will be able to use their knowledge of magnetism to solve a problem or respond to a situation.* | |
| **District/School Texts** | | **District/School Supplementary Resources** |
| Haddon Heights - Unit Kits for Science Labs and References  Lawnside - Houghton Mifflin Harcourt : Science Fusion  Merchantville- Exploring Science (National Geographic Learning) | | **-Scholastic News**  **-Brain POP**  **-NewsELA**  **-Read Works** |
| [**Interdisciplinary Connections**](http://www.state.nj.us/education/cccs/) | | |
| ELA  Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-PS2-3) **RI.3.1**  Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. (3-PS2-3) **RI.3.3**  Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence). (3-PS2-3) **RI.3.8**  Ask and answer questions about information from a speaker, offering appropriate elaboration and detail. (3-PS2-3) **SL.3.3** | **Math**  Students should use measurement tools in a variety of ways as they conduct investigations. They could find the mass of an object in order to understand that the more mass an object has, the greater the force needed to attract, repel, or move it. Students then reason mathematically as they analyze their data to determine patterns of change that can be used to support explanations of cause-and-effect relationships. Students might also use algebraic reasoning during investigations. For example, when measuring magnetic strength by increasing the number of magnets, students can use multiplication to make predictions about possible outcomes. So, if a paper clip moves toward a single magnet when it is 2 centimeters away, then students might predict that the paper clip will move toward a double magnet when it is 4 centimeters away. Or, if the paper clip moved towards a set of four magnets at a distance of 8 centimeters, then students might predict that the paper clip will move toward a single magnet when it is 2 centimeters away. | **Technology**  8.1.5.A.2 - Format a document using a word processing application to enhance text and include graphics, symbols and/ or pictures.  8.2.5.C.4 - Collaborate and brainstorm with peers to solve a problem evaluating all solutions to provide the best results with supporting sketches or models. |
| **21st Century Skills/Career Education**  CRP2: Apply appropriate academic and technical skills.  CRP4: Communicate clearly and effectively and with reason.  CRP11: Use technology to enhance productivity. |  |  |
| **Modifications and Accommodations** | | |
| **Special Education Students**  Small group  Direct instruction  restate/rephrase  graphic organizers  modified assignments  chunking  leveled text  intentional grouping  read text  extended time  breaks  Teacher records/ student dictates | **English Language Learners**  Labels  word banks  visuals  student friendly definitions  extended time  chunking  intentional grouping | **Students at Risk of School Failure**  leveled text  graphic organizers  modified assignments  kinesthetic activities  restate/rephrase  chunking  intentional grouping |
| **Gifted and Talented**  extension project  leveled text  leadership roles  intentional grouping  Targeted learning from assessment | **Students with 504 Plans**  breaks  chunking  preferential seating  visual reminders  restate/rephrase  check-in/check-out system  visual time  Teacher records/ student dictates |  |
| **Unit Duration: 15** | | |

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| **STANDARD:**  **3-LS3: Heredity: Inheritance and Variation of Traits** | | |
| **Unit 4: Traits** | | |
| **ESTABLISHED GOALS (INDICATOR #)** | **TRANSFER (How will this apply to their lives?)** | |
| **3-LS3-1: Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.**  **3-LS3-2: Use evidence to support the explanation that traits can be influenced by the environment.** | *Students will be able to independently use their knowledge to…*   * Provide evidence that plants and animals have traits inherited from parents and traits that exists in a group of similar organisms. * Justify the explanation that traits can be influenced by the environment. | |
| **MEANING** | |
| UNDERSTANDINGS:  *Students will …*   * Similarities and differences in patterns can be used to sort and classify natural phenomena (e.g., inherited traits that occur naturally). * Many characteristics of organisms are inherited from their parents. * Different organisms vary in how they look and function because they have different inherited information. | ESSENTIAL QUESTIONS:   * *What kinds of traits are passed on from parent to offspring?* * *What environmental factors might influence the traits of a specific organism?* |
| **Unit 4: Grade 3 - Lessons** | | |
| Scientists sort and classify organisms based on similarities and differences in characteristics or traits. Students can easily observe external traits of animals such as body coverings; type, shape, and number of external features; and type, shape, and color of eyes. Similarly, they can observe external traits of plants such as the type of root system or the shape, color, and average size of leaves. The characteristics that organisms inherit influence how they look and how they function within their environment. As students observe parents and their offspring, they will notice that parents and offspring share many traits. As they observe a larger number of organisms from the same group, they will notice similarities and differences in the traits of individuals within a group. Students can observe similarities and differences in the traits of organisms and use these observations as evidence to support the idea that offspring inherit traits from parents, but these traits do vary within a group of similar organisms.  Sometimes, variations among organisms within a group are due to the fact that individuals inherit traits from different parents. However, traits can also be influenced by an individuals’ interaction with the environment. For example, all lions have the necessary inherited traits that allow them to hunt, such as sharp claws, sharp teeth, muscular body type, and speed. However, being a successful hunter also depends on the interaction that individual lions have with their parents and their environment. A lion cub raised in captivity without parents will have the same type of claws, teeth, and muscular body as all other lions, but it may never have the opportunity to learn to use its traits to hunt. Additionally, the environment can affect an organism’s physical development. For example, any plant that lacks sufficient nutrients or water will not thrive and grow as it should. It will most likely be smaller in size, have fewer leaves, and may even look sickly. Likewise, too much food and lack of exercise can result in an overweight dog.  To investigate how the environment influences traits, students can plant the same type of seedling in different locations, which will provide variations of light, water, or soil. Data can be collected about rates of growth, height, and heartiness of the plant. The information gathered can be analyzed to provide evidence as to how the environment influenced the traits of the plant. As students read about, observe, and discuss these ideas, they learn that even though every organism inherits particular traits from its parents, the environment can have a marked effect on those traits and the development of others.  **Suggested Mystery Science Lessons**  [Animals Through Time: Animal Survival and Heredity](https://mysteryscience.com/animals/animal-survival-heredity)  **Mystery 1:** Habitats and Environmental Change (Where Can You Find Whales in a Desert?)  **Mystery 2:** Structures & Adaptations, Fossil Evidence, Classification (How Do We Know What Dinosaurs Looked Like?)  **Mystery 3:** Fossil Evidence, Behavior (Can You Outrun a Dinosaur?)  **Mystery 4:**  Heredity, Variation and Selection (What Kinds of Animals Might There Be in the Future?)  **Mystery 5:** Heredity, Variation and Selection (Can Selection Happen Without People?)  **Mystery 6:**  Animal Groups and Survival (Why Do Dogs Wag Their Tails?)  **Mystery 7:** Habitat Change and Engineering (What’s the Best Way to Get Rid of Mosquitoes?)  **Mystery 8:**  Traits and Environment (How Long Can People (and Animals) Survive in Outer Space?)  **Suggested BetterLesson Unit:**  **Lesson 1:** [Mammals and Their Parents, Perfect Together](http://betterlesson.com/lesson/623417/mammals-and-their-parents-perfect-together) *SWBAT: Identify and interpret traits that are found in mammals by noticing differences among animals of the same species. Make a claim that traits are inherited from parents that is supported by evidence.*   * [Bill Nye-Mammals (YouTube)](https://www.youtube.com/watch?v=B1q3mj3epXI) * Proficiency scale (if used)   **Lesson 2:** [Reptiles, Time For a New Outfit](http://betterlesson.com/lesson/626395/reptiles-time-for-a-new-outfit) SWBAT: *Describe and Identify the characteristics of reptiles. Analyze how a snake sheds its skin by using models to explain the process.*   * [Bill Nye- Reptiles (YouTube)](https://www.youtube.com/watch?v=fgxh4bSF0sc) * Proficiency scale (if used)   **Lesson 3:** [Amazing Amphibians](http://betterlesson.com/lesson/627336/amazing-amphibians) *SWBAT: Identify and interpret traits that are found in amphibians by comparing and contrasting using a Venn diagram. Compare and contrast species traits in amphibians and reptiles by referring to the text using a Venn Diagram.*   * [Bill Nye- Amphibians (YouTube)](https://www.youtube.com/watch?v=zxLgSixLios) * Proficiency scale (if used)   **Lesson 4:** [Fish, Vertebrates of the Sea](http://betterlesson.com/lesson/627426/fish-vertebrates-of-the-sea) *SWBAT: Compare and contrast the characteristics of the same species by examining the position and location of a fish's mouth.*   * [Bill Nye- Fish (YouTube)](https://www.youtube.com/watch?v=CSvum6dFoGU) * Proficiency scale (if used)   **Lesson 5:** [Awesome Bird Traits](http://betterlesson.com/lesson/627509/awesome-bird-traits) *Identify and observe bird traits, particularly the form and function of feathers, by examining and investigating contour and down feathers*   * [Bill Nye- Birds (YouTube)](https://www.youtube.com/watch?v=6LE--0UqJkA) * Proficiency scale (if used)   **Lesson 6:** [Vertebrate Classification Review](http://betterlesson.com/lesson/627536/vertebrate-classification-review) *SWBAT: Classify and describe the inherited traits of animals in the vertebrate classification by creating a foldable where they describe the traits, illustrate the animals that belong to each of the 5 vertebrate classifications.* (Suggested Performance Task) | | |
| **Science and Engineering Practices** | **Disciplinary Core Ideas** | **Crosscutting concepts** |
| Analyzing and Interpreting Data  • Analyze and interpret data to make sense of phenomena using logical reasoning. (3-LS3-1) Constructing Explanations and Designing Solutions  • Use evidence (e.g., observations, patterns) to support an explanation. (3-LS3-2) | LS3.A: Inheritance of Traits  • Many characteristics of organisms are inherited from their parents. (3-LS3-1)  • Other characteristics result from individuals’ interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment. (3- LS3-2) LS3.B: Variation of Traits  • Different organisms vary in how they look and function because they have different inherited information. (3-LS3-1)  • The environment also affects the traits that an organism develops. (3-LS3-2) | Patterns  • Similarities and differences in patterns can be used to sort and classify natural phenomena. (3- LS3-1) Cause and Effect  • Cause and effect relationships are routinely identified and used to explain change. (3-LS3-2) |
| **District/School Formative Assessment Plan** | | **District/School Summative Assessment Plan** |
| *Part A:*  *Students who understand the concepts are able to:*   * Sort and classify natural phenomena using similarities and differences. *(Clarification: Patterns are the similarities and differences in traits shared between offspring and their parents or among siblings, with an emphasis on organisms other than humans)*. * Analyze and interpret data to make sense of phenomena using logical reasoning. * Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. *(Assessment does not include genetic mechanisms of inheritance and prediction of traits, and is limited to nonhumans.)*   *Part B:*  *Students who understand the concepts are able to:*   * Identify cause-and-effect relationships in order to explain change. * Use evidence (e.g., observations, patterns) to support an explanation. * Use evidence to support the explanation that traits can be influenced by the environment. Examples of the environment’s effect on traits could include: * Normally tall plants that grow with insufficient water are stunted. * A pet dog that is given too much food and little exercise may become overweight.   **Animals Through Time: Animal Survival and Heredity:**  [Mystery 1: Habitats and Environmental Change](https://docs.google.com/document/d/13lh22EKiHkgaBxbS-urotII3pySSr_RTZo3vyV6g45g/edit?usp=sharing)  [Mystery 2: Structures and Adaptations, Fossil Evidence, Classification](https://docs.google.com/document/d/1QvAOrg2_l8tmQvVzsaEMEOjJdxwNgWi6pMPPN9f6Um0/edit?usp=sharing)  [Mystery 3: Fossil Evidence, Behavior](https://docs.google.com/document/d/1udGQljgcxqpvnyPsIoBqZQ2IL-JpV_oCtF7B-c0sM98/edit?usp=sharing)  [Mystery 4: Heredity, Variation and Selection](https://docs.google.com/document/d/1B933L8INUAt4pAf9_Ja5uCifp3P_NWqR8Fu55y9Uh54/edit?usp=sharing)  [Mystery 5: Heredity, Variation, and Selection](https://docs.google.com/document/d/1HRCn_eOuW9py7VD-DoQ2PW3HOppkZVwetadWAGOmmlU/edit?usp=sharing)  [Mystery 6: Animal Groups and Survival](https://docs.google.com/document/d/1miaqoWijBWECD-ILtmiNeK0Kzmcvhv5VvtV2zFW27hc/edit?usp=sharing)  [Mystery 7: Habitat Change and Engineering](https://docs.google.com/document/d/1IHhfTB5qtYHruMWib1h5tMCvCdk1wGxjFOfi_yltxS4/edit?usp=sharing)  [Mystery 8: Traits and Environment](https://docs.google.com/document/d/196wChg_yG9vOfQsllXaUxCY7q3RsW3Xz0P9PzO1LCCc/edit?usp=sharing) | | *Summative assessment is an opportunity for students to demonstrate mastery of the skills taught during a particular unit.*  **Mystery Science Assessments:**  ***(all resources are accessible on google drive)***  [Animals Through Time](https://docs.google.com/document/d/1lpVrXi5K11usE627O6Skd8Xiwy6TdlUR-vxRK3cm70w/edit?usp=sharing) |
| **Alternative Assessments** | | |
| **Evaluative Criteria** | **Assessment Evidence** | |
| **Suggested Performance Rubric:** Use the following or similar rubric to evaluate students’ performance on lesson assessments:   |  |  | | --- | --- | | **4 - Innovating:** | Advanced understanding and application of the standard | | **3 - Applying:** | Consistently applies skills independently | | **2 - Developing:** | Progressing towards independent application of skills | | **1 - Beginning:** | Early stages of development, need assistance | | Suggested Performance Tasks include but are not limited to:  **(Better Lesson suggestions are referenced above as well.)**  **Performance Task:** [Vertebrate Classification Review](http://betterlesson.com/lesson/627536/vertebrate-classification-review)  *SWBAT: Classify and describe the inherited traits of animals in the vertebrate classification by creating a foldable where they describe the traits, illustrate the animals that belong to each of the 5 vertebrate classifications.* | |
| **District/School Texts** | | **District/School Supplementary Resources** |
| Haddon Heights - Unit Kits for Science Labs and References  Lawnside - Houghton Mifflin Harcourt : Science Fusion  Merchantville- Exploring Science (National Geographic Learning) | | **-Scholastic News**  **-Brain POP**  **-NewsELA**  **-Read Works** |
| [**Interdisciplinary Connections**](http://www.state.nj.us/education/cccs/) | | |
| **ELA**   * Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-LS3-1),(3-LS3-2) **RI.3.1** * Determine the main idea of a text; recount the key details and explain how they support the main idea. (3-LS3-1),(3-LS3-2) **RI.3.2** * Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. (3-LS3-1),(3-LS3-2) **RI.3.3** * Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (3-LS3-1),(3-LS3-2),(3-LS4-2) **W.3.2** * Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace. (3-LS3-1),(3-LS3-2) **SL.3.4** | **Math**   * Reason abstractly and quantitatively. (3-LS3-1),(3-LS3-2) **MP.2** * Model with mathematics. (3-LS3-1),(3-LS3-2) **MP.4** * Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters. (3-LS3-1),(3-LS3-2) **3.MD.B.4** | **21st Century Skills/Career Education**   * CRP2: Apply appropriate academic and technical skills. * CRP4: Communicate clearly and effectively and with reason. * CRP11: Use technology to enhance productivity. |
| **Modifications and Accommodations** | | |
| **Special Education Students**  Small group  Direct instruction  restate/rephrase  graphic organizers  modified assignments  chunking  leveled text  intentional grouping  read text  extended time  breaks  Teacher records/ student dictates | **English Language Learners**  Labels  word banks  visuals  student friendly definitions  extended time  chunking  intentional grouping | **Students at Risk of School Failure**  leveled text  graphic organizers  modified assignments  kinesthetic activities  restate/rephrase  chunking  intentional grouping |
| **Gifted and Talented**  extension project  leveled text  leadership roles  intentional grouping  Targeted learning from assessment | **Students with 504 Plans**  breaks  chunking  preferential seating  visual reminders  restate/rephrase  check-in/check-out system  visual time  Teacher records/ student dictates |  |
| **Unit Duration: 15** | | |

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| **STANDARD:**  **3-LS1: From Molecules to Organisms : Structures and Process** | | |
| **Unit 5: Continuing the Cycle** | | |
| **ESTABLISHED GOALS (INDICATOR #)** | **TRANSFER (How will this apply to their lives?)** | |
| **3-LS1-1: Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.**  **3-LS4-2: Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.** | *Students will be able to independently use their knowledge to…*   * Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. * Construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing. | |
| **MEANING** | |
| UNDERSTANDINGS:   * Science findings are based on recognizing patterns. * Similarities and differences in patterns can be used to sort and classify natural phenomena. * Patterns of change can be used to make predictions. * Reproduction is essential to the continued existence of every kind of organism. * Plants and animals have unique and diverse life cycles. | ESSENTIAL QUESTIONS:   * *Part A: Do all living things have the same life cycle?* * *Part B: Are there advantages to being different?* |
| **Unit 5: Grade 3 - Lessons** | | |
| In third grade, students learn that the changes an organism goes through during its life form an observable pattern. Although different types of organisms have unique and diverse life cycles, they follow a pattern of birth, growth, reproduction, and death. While observing and studying life cycles, students should look closely for patterns of change and use these observed patterns to make predictions. They should also sort and classify a variety of organisms using the similarities and differences they observe. For example, flowering plants begin as seeds. With the right conditions, the seeds germinate and grow, from small seedlings to adult plants. Adult plants then produce flowers that, once pollinated, will produce seeds from which the next generation will grow.  Animals, likewise, go through observable patterns of change, which allow students to sort and classify them based on the stages of their life cycles. Some animals, for example, undergo complete metamorphosis; others go through incomplete metamorphosis; while others do not undergo metamorphosis at all. Some animals begin their life cycles with a live birth, while others hatch from eggs. Students should develop models to describe the unique and diverse life cycles of organisms. They can draw diagrams, build physical models, or create presentations to show the patterns of change that make up the life cycles of given organisms. As students become familiar with the stages in the life cycles of different types of plant and animals, they will come to understand that reproduction is essential to the continued existence of every kind of organism.  In **Unit 4: Traits**, students learned that organisms have traits that are inherited from their parents. This process occurs during reproduction. While observing and identifying traits of a specific species or type of organism, students also learned that there are differences in characteristics within the same species. In this unit, students learn that these differences in characteristics among individuals of the same species sometimes provide advantages in survival, finding mates, and reproducing. For example, when comparing plants from the same species, those with larger or more abundant thorns may be less likely to be eaten by a predator. Likewise, animals with better camouflage coloration may be more likely to survive and therefore more likely to leave offspring. As students read about, observe, and discuss variations in organisms’ characteristics, they should identify cause-and-effect relationships that help explain why any variation might give an advantage in surviving or reproducing to some members of a species over others.  **Mystery Science Lessons**  [Power of Flowers: Plant Life Cycle and Heredity](https://mysteryscience.com/flowers/plant-life-cycle-heredity)  **Mystery 1**: Flowering and Reproduction (Why Do Plants Grow Flowers?)  **Mystery 2:** Reproduction (Why Do Plants Give Us Fruit?)  **Mystery 3:** Inheritance, Traits and Selection (Why are Some Apples Red and Some Green?)  **Mystery 4:**  Fruiting, Reproduction (How Could You Make the Biggest Fruit in the World?)  **Suggested BetterLesson Unit: Animal Life Cycles**  **Lesson 1:** [Butterflies and Grasshoppers](https://betterlesson.com/lesson/637832/life-cycles-lesson-1-butterflies-and-grasshoppers) *Compare and Contrast a grasshopper's life cycle to that of a butterfly by accurately comparing the different stages noting the similarities and the differences.*   * [Butterfly Video-Egg to Butterfly (YouTube)](https://www.youtube.com/watch?v=O1S8WzwLPlM) * Proficiency scale (If used)   **Lesson 2:** [Life Cycle of an Ant](https://betterlesson.com/lesson/640795/lesson-2-life-cycle-of-an-ant) *Predict and then model the life cycle of an ant by completing a graphic organizer and then comparing it to the prediction.*   * Proficiency scale (If used)   **Lesson 3:** [Chicken & The Egg](https://betterlesson.com/lesson/637838/life-cycles-lesson-3-chicken-the-egg) *Use a model to investigate the life cycle of a bird, focusing on the unique role the egg plays in enabling the species to survive.*   * [Chicken Video- Egg to Chicken (YouTube)](https://www.youtube.com/watch?v=UwMcnlDTwMA) * Proficiency scale (If used)   **Lesson 4:** [The Atlantic Salmon](https://betterlesson.com/lesson/637836/life-cycles-lesson-4-the-atlantic-salmon) *Model the life cycle of the Atlantic Salmon by examining each cycle and identifying at least 3 facts for each.*   * Proficiency scale (If used)   **Lesson 5:** [Frogs](https://betterlesson.com/lesson/637837/life-cycles-lesson-5-frogs) *Model the life cycle of the frog by examining each cycle and identifying at least 3 facts for each.*   * [Frog Video-Egg to Frog (YouTube)](https://www.youtube.com/watch?v=wAcwjWi6I9Y) * Proficiency scale (If used)   **Lesson 6:** [Examining the Life Cycle of a Sea Turtle](https://betterlesson.com/lesson/617772/life-cycles-lesson-6-examining-the-life-cycle-of-the-sea-turtle) *Model the life cycle of the sea turtle by examining each cycle and identifying at least 3 facts for each*   * Proficiency scale (If used)   **Lesson 7:** [Life Cycle Review Using QR Codes](https://betterlesson.com/lesson/637854/life-cycle-review-using-qr-codes) *Use multimedia and print resources to explain life cycles by drawing and identifying varying life cycles using the Educreations App*   * Proficiency scale (If used) | | |
| **Science and Engineering Practices** | **Disciplinary Core Ideas** | **Crosscutting concepts** |
| Developing and Using Models  • Develop models to describe phenomena. (3-LS1- 1) Constructing Explanations and Designing Solutions  • Use evidence (e.g., observations, patterns) to construct an explanation. (3-LS4-2) | S1.B: Growth and Development of Organisms • Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles. (3- LS1-1) LS4.B: Natural Selection  • Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing. (3-LS4-2) | Patterns  • Patterns of change can be used to make predictions. (3-LS1-1) Cause and Effect  • Cause and effect relationships are routinely identified and used to explain change. (3-LS4- 2),(3-LS4-3)  Connections to Nature of Science Scientific Knowledge is Based on Empirical Evidence  • Science findings are based on recognizing patterns. (3-LS1-1) |
| **District/School Formative Assessment Plan** | | **District/School Summative Assessment Plan** |
| *Students who understand the concepts are able to:*   * Sort and organisms (inherited traits) using similarities and differences in patterns. * Make predictions using patterns of change. * Develop models to describe phenomena. * Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. (I.e., Changes organisms go through during their life form a pattern.) *(Assessment of plant life cycles is limited to those of flowering plants. Assessment does not include details of human reproduction.*   *Students who understand the concepts are able to:*   * Identify cause-and-effect relationships in order to explain change. * Use evidence (e.g., observations, patterns) to construct an explanation. * Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing. Examples of cause-and-effect relationships could include: * Plants that have larger thorns than other plants may be less likely to be eaten by predators. * Animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring.   **Power of Flowers: Plant Life Cycle and Heredity:**  [Mystery 1: Flowering and Reproduction](https://docs.google.com/document/d/12xOIeis_qEtedssqoYZphHZPcLCY3hixZQXuxKlMci0/edit?usp=sharing)  [Mystery 2: Reproduction](https://docs.google.com/document/d/14zn4dD-ElgaHdp2M4-N0PXhande16tRH-D3IH1NdbpM/edit?usp=sharing)  [Mystery 3: Inheritance, Traits and Selection](https://docs.google.com/document/d/1xmf8fmZ0yuEF9QK_POUQwCva4Hd_cB4Xhuim1YyEBJs/edit?usp=sharing)  [Mystery 4: Fruiting, Reproduction](https://docs.google.com/document/d/1KKtHgfj6vD86Pr0NdKf5boyUzNMOAAPN6vl9HVNPAUM/edit?usp=sharing) | | *Summative assessment is an opportunity for students to demonstrate mastery of the skills taught during a particular unit.*  **Mystery Science Assessments:**  ***(all resources are accessible on google drive)***  [***Power of Flowers: Plant Life Cycle and Heredity***](https://docs.google.com/document/d/1e5QkWhdwLS8yev2P1V9mOKizYZqkN_zL-CZjPtfwcaQ/edit?usp=sharing)  ***BetterLesson Assessment:***  [***Life Cycle Unit Assessment***](https://betterlesson.com/lesson/638051/animal-life-cycles-assessment-day) |
| **Alternative Assessments** | | |
| **Evaluative Criteria** | **Assessment Evidence** | |
| **Suggested Performance Rubric:** Use the following or similar rubric to evaluate students’ performance on lesson assessments:   |  |  | | --- | --- | | **4 - Innovating:** | Advanced understanding and application of the standard | | **3 - Applying:** | Consistently applies skills independently | | **2 - Developing:** | Progressing towards independent application of skills | | **1 - Beginning:** | Early stages of development, need assistance | | Suggested Performance Tasks include but are not limited to:  **(Better Lesson suggestions are referenced above as well.)**  **Performance Task:**[Life Cycle Review Using QR Codes](https://betterlesson.com/lesson/637854/life-cycle-review-using-qr-codes)  *Use multimedia and print resources to explain life cycles by drawing and identifying varying life cycles using the Educreations App* | |
| **District/School Texts** | | **District/School Supplementary Resources** |
| Haddon Heights - Unit Kits for Science Labs and References  Lawnside - Houghton Mifflin Harcourt : Science Fusion  Merchantville- Exploring Science (National Geographic Learning) | | **-Scholastic News**  **-Brain POP**  **-NewsELA**  **-Read Works** |
| [**Interdisciplinary Connections**](http://www.state.nj.us/education/cccs/) | | |
| **ELA**  Students need opportunities to read about the life cycles and inherited traits of organisms in a variety of texts and resources. During discussions, teachers might pose questions such as   * What are the stages of an organism’s life cycle? * How do the life cycles of organisms compare? * What makes an organism’s life cycle unique? * How do organisms use their characteristics to survive, find mates, and reproduce?   Students need access to a variety of books, pictures, and maps. They should be able to refer to these resources specifically when answering questions, articulating the main idea, and describing the key ideas using supporting details in their explanations. Additionally, they should describe the relationship between scientific ideas or concepts and using language that pertains to time, sequence, and cause and effect.  Students also need opportunities to write informative/explanatory texts to convey ideas and information gathered through investigations and from other resources. For example, after reading texts about a given organism, students should be expected to use key details and appropriate facts about that organism to compose an informative piece of writing that lists some of the organism’s traits that might give it an advantage in survival, growth, or reproduction over others of its kind. Students can also use Venn diagrams or T-charts to compare traits among individuals from a common species. These data can be used to explain how variations in characteristics can give an advantage to one or another individual in reproduction, growth, or survival. Students should also have the opportunity to report on how one or more traits of an organism give it an advantage in survival, growth, and/or reproduction in its environment. As students speak, they should share relevant facts, details, and information while speaking clearly and at an understandable pace. | **Math**  Students can draw a scaled picture graphs or bar graphs to represent a data set with several categories, such as the average length of the lifespan of a variety of organisms, which could range from days to hundreds of years, or the varying reproductive capacity of organisms, which could range from a single offspring to thousands. As students analyze their data, they may observe similarities within a category of organisms (e.g., mammals, reptiles, or insects) or marked differences across these same categories. Analyzing data will help students understand that organisms have unique and diverse life cycles, but all have in common birth, growth, reproduction, and death. As students collect, organize, and analyze their data, they have opportunities to reason abstractly and model with mathematics. | **21st Century Skills/Career Education**  CRP2: Apply appropriate academic and technical skills.  CRP4: Communicate clearly and effectively and with reason.  CRP11: Use technology to enhance productivity. |
|  | **Technology**   * 8.1.5.F.1 - Apply digital tools to collect, organize, and analyze data that support a scientific finding |  |
| **Modifications and Accommodations** | | |
| **Special Education Students**  Small group  Direct instruction  restate/rephrase  graphic organizers  modified assignments  chunking  leveled text  intentional grouping  read text  extended time  breaks  Teacher records/ student dictates | **English Language Learners**  Labels  word banks  visuals  student friendly definitions  extended time  chunking  intentional grouping | **Students at Risk of School Failure**  leveled text  graphic organizers  modified assignments  kinesthetic activities  restate/rephrase  chunking  intentional grouping |
| **Gifted and Talented**  extension project  leveled text  leadership roles  intentional grouping  Targeted learning from assessment | **Students with 504 Plans**  breaks  chunking  preferential seating  visual reminders  restate/rephrase  check-in/check-out system  visual time  Teacher records/ student dictates |  |
| **Unit Duration: 10** | | |

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| **STANDARD:**  **3-LS2: Ecosystems: Interactions, Energy , and Dynamics** | | |
| **Unit 6: Organisms and the Environment** | | |
| **ESTABLISHED GOALS (INDICATOR #)** | **TRANSFER (How will this apply to their lives?)** | |
| 3-LS2-:**Construct an argument that some animals form groups that help members survive.**  **3-LS4-3: Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.** | *Students will be able to independently use their knowledge to…*   * Construct an argument to find how some animals form groups that help members survive. * Construct an argument with evidence to show particular habits of some organisms and how they survive less well and how some cannot survive at all. | |
| **MEANING** | |
| UNDERSTANDINGS:   * Cause-and-effect relationships are routinely identified and used to explain change. * Knowledge of relevant scientific concepts and research findings is important in engineering. * For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. * Organisms and their habitat make up a system in which the parts depend on each other. | ESSENTIAL QUESTIONS:   * *In a particular habitat, why do some organisms survive well, some survive less well, and some cannot survive at all?* |
| **Unit 6: Grade 3 - Lessons** | | |
| Organisms and their habitats make up a system in which they are interdependent. Environmental factors affect the growth and survival of every type of organism, and organisms in turn affect the environment. The focus of this unit of study is identifying cause-and-effect relationships between the environment and organisms’ ability to survive and reproduce.  In this unit, students first learn that all organisms have a variety of behaviors and traits that enable them to survive. One of these behaviors includes forming groups. Groups serve different functions and can vary dramatically in size. Animals may form groups to obtain food, to defend themselves, and/or to cope with changes in their environment. Students should have opportunities to conduct research on animals that form groups in order to understand how being part of a group is beneficial to survival and reproduction. Students might begin with studying animals that are indigenous to the local environment (e.g., squirrels, coyotes, deer, birds, or fish), and then investigate other animals of interest, such as (but not limited to) lions, sea turtles, or penguins. For each animal that is studied, students should identify the social structure of the group and how this structure supports individuals in their need to obtain food, defend themselves, and reproduce.  Topics to focus on might be the roles of males and females within a group as well as the interactions between parents and offspring. For example, within some groups of animals, the offspring leave the nest or pack early while others remain for longer periods of time. Those that stay within the group for longer periods of time may do so because of the benefits provided by the group structure. As students compare group structures of different animals and the functions that define each, they should also think about how the size of the group and the roles of individuals within the group affect the animals’ overall ability to obtain food, defend themselves, and reproduce. Students will construct arguments with evidence, using cause-and-effect relationships to show why some animals form groups and how this is advantageous to survival and reproduction.  In this unit, students also learn that for any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. As students explore the components of a given environment, they learn that each environment has a particular climate as well as finite sources of water and space. Each environment will support organisms (both plants and animals) with structures and behaviors that are best suited to the climate and resources available. Students will need opportunities to investigate the organisms (plants and animals) that live in certain environments and determine what traits and behaviors allow these organisms to survive and reproduce in that environment. In addition, students should identify some examples of organisms that would survive less well, or not at all, in that environment, and give evidence to support their thinking. Students construct arguments with evidence, using cause-and-effect relationships, to show how the needs and characteristics of the organisms are not well suited for the given environment.  **Suggested Mystery Science Lessons:**  [Animals Through Time: Animal Survival and Heredity](https://mysteryscience.com/animals/animal-survival-heredity)  **Mystery 4:**  Heredity, Variation and Selection (What Kinds of Animals Might There Be in the Future?)  **Mystery 5:** Heredity, Variation and Selection (Can Selection Happen Without People?)  **Mystery 6:**  Animal Groups and Survival (Why Do Dogs Wag Their Tails?)  **Mystery 7:** Habitat Change and Engineering (What’s the Best Way to Get Rid of Mosquitoes?)  **Mystery 8:**  Traits and Environment (How Long Can People (and Animals) Survive in Outer Space?)  **Suggested BetterLesson Unit: Ecosystems and Biological Evolution**  **Lesson 1:**[Biomes](http://betterlesson.com/lesson/632382/biomes) *Students will be able to organize information from visuals about the major biomes of the world.*   * [Powerpoint of each Biome](https://betterlesson.com/lesson/resource/3146179/powerpoint?from=resource_title)  (recommended 1-2 Biomes each day) * Proficiency scale (if used)   **Lesson 2:** [Adaptations](http://betterlesson.com/lesson/632632/adaptations) *Students will be able to obtain critical information about organisms that live in certain environments, through informational reading.*  **Lesson 3:** [Biomes Experts](http://betterlesson.com/lesson/632920/biomes-experts) *Students will be able to present information about an assigned biome to their peers.*  **Lesson 4:** [An Animal That Can Survive in Two Biomes: A Two Day Activity](http://betterlesson.com/lesson/632921/an-animal-that-can-survive-in-all-biomes-a-two-day-activity) *Students will be able to use information about environments and adaptations in order to design an animal or plant that could survive in all (suggested performance task).* | | |
| **Science and Engineering Practices** | **Disciplinary Core Ideas** | **Crosscutting concepts** |
| [**Engaging in Argument from Evidence**](http://www.nap.edu/openbook.php?record_id=13165&page=71)   * [Construct an argument with evidence, data, and/or a model. (3-LS2-1)](http://www.nap.edu/openbook.php?record_id=13165&page=74) * [Construct an argument with evidence. (3-LS4-3)](http://www.nap.edu/openbook.php?record_id=13165&page=74) | [**LS2.D: Social Interactions and Group Behavior**](http://www.nap.edu/openbook.php?record_id=13165&page=156)   * [Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size *(Note: Moved from K–2)*. (3-LS2-1)](http://www.nap.edu/openbook.php?record_id=13165&page=156)   [**LS4.C: Adaptation**](http://www.nap.edu/openbook.php?record_id=13165&page=164)   * [For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. (3-LS4-3)](http://www.nap.edu/openbook.php?record_id=13165&page=164) | [**Cause and Effect**](http://www.nap.edu/openbook.php?record_id=13165&page=87)   * [Cause and effect relationships are routinely identified and used to explain change. (3-LS2-1)](http://www.nap.edu/openbook.php?record_id=13165&page=98),(3-LS4-3) |
| **District/School Formative Assessment Plan** | | **District/School Summative Assessment Plan** |
| *Students who understand the concepts are able to:*   * Identify cause-and-effect relationships in order to explain change. * Construct an argument with evidence. * Construct an argument with evidence (e.g., needs and characteristics of the organisms and habitats involved) that in a particular habitat, some organisms can survive well, some survive less well, and some cannot survive at all.   **Animals Through Time: Animal Survival and Heredity:**  [Mystery 4: Heredity, Variation and Selection](https://docs.google.com/document/d/1B933L8INUAt4pAf9_Ja5uCifp3P_NWqR8Fu55y9Uh54/edit?usp=sharing)  [Mystery 5: Heredity, Variation, and Selection](https://docs.google.com/document/d/1HRCn_eOuW9py7VD-DoQ2PW3HOppkZVwetadWAGOmmlU/edit?usp=sharing)  [Mystery 6: Animal Groups and Survival](https://docs.google.com/document/d/1miaqoWijBWECD-ILtmiNeK0Kzmcvhv5VvtV2zFW27hc/edit?usp=sharing)  [Mystery 7: Habitat Change and Engineering](https://docs.google.com/document/d/1IHhfTB5qtYHruMWib1h5tMCvCdk1wGxjFOfi_yltxS4/edit?usp=sharing)  [Mystery 8: Traits and Environment](https://docs.google.com/document/d/196wChg_yG9vOfQsllXaUxCY7q3RsW3Xz0P9PzO1LCCc/edit?usp=sharing) | | *Summative assessment is an opportunity for students to demonstrate mastery of the skills taught during a particular unit.*  **Mystery Science Assessments:**  ***(all resources are accessible on google drive)***  [Animals Through Time](https://docs.google.com/document/d/1lpVrXi5K11usE627O6Skd8Xiwy6TdlUR-vxRK3cm70w/edit?usp=sharing)**(Also includes concepts from Unit 7)**  **BetterLesson Unit Assessment:**  [Adaptation and Environmental Change Assessment](http://betterlesson.com/lesson/633016/adaptations-and-environmental-change-an-assessment)  *Students will be able to assess images and make claims with evidence regarding adaptations, traits, and environment.* |
| **Alternative Assessments** | | |
| **Evaluative Criteria** | **Assessment Evidence** | |
| **Suggested Performance Rubric:** Use the following or similar rubric to evaluate students’ performance on lesson assessments:   |  |  | | --- | --- | | **4 - Innovating:** | Advanced understanding and application of the standard | | **3 - Applying:** | Consistently applies skills independently | | **2 - Developing:** | Progressing towards independent application of skills | | **1 - Beginning:** | Early stages of development, need assistance | | Suggested Performance Tasks include but are not limited to:  **(Better Lesson suggestions are referenced above as well.)**  **Performance Task:** [An Animal That Can Survive in Two Biomes: A Two Day Activity](http://betterlesson.com/lesson/632921/an-animal-that-can-survive-in-all-biomes-a-two-day-activity)  *Students will be able to use information about environments and adaptations in order to design an animal or plant that could survive in all.* | |
| **District/School Texts** | | **District/School Supplementary Resources** |
| Haddon Heights - Unit Kits for Science Labs and References  Lawnside - Houghton Mifflin Harcourt : Science Fusion  Merchantville- Exploring Science (National Geographic Learning) | | **-Scholastic News**  **-Brain POP**  **-NewsELA**  **-Read Works** |
| [**Interdisciplinary Connections**](http://www.state.nj.us/education/cccs/) | | |
| **ELA**  Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-LS2-1), (3-LS4-3) **RI.3.1**  Determine the main idea of a text; recount the key details and explain how they support the main idea. (3-LS4-3) **RI.3.2**  Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. (3-LS2-1),(3-LS4-3) **RI.3.3**  Write opinion pieces on topics or texts, supporting a point of view with reasons. (3-LS2-1), (3-LS4-3) **W.3.1**  Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (3-LS4-3) **W.3.2**  Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace. (3-LS4-3) **SL.3.4** | **Math**  Model with mathematics. (3-LS2-1),(3-LS4-3)  **MP.4**  Number and Operations in Base Ten. (3-LS2-1) **3.NBT** | **21st Century Skills/Career Education**  CRP2: Apply appropriate academic and technical skills.  CRP4: Communicate clearly and effectively and with reason.  CRP11: Use technology to enhance productivity. |
| **Technology**  8.1.5.A.2 - Format a document using a word processing application (or google slides) to enhance text and include graphics, symbols and/ or pictures. |  |  |
| **Modifications and Accommodations** | | |
| **Special Education Students**  Small group  Direct instruction  restate/rephrase  graphic organizers  modified assignments  chunking  leveled text  intentional grouping  read text  extended time  breaks  Teacher records/ student dictates | **English Language Learners**  Labels  word banks  visuals  student friendly definitions  extended time  chunking  intentional grouping | **Students at Risk of School Failure**  leveled text  graphic organizers  modified assignments  kinesthetic activities  restate/rephrase  chunking  intentional grouping |
| **Gifted and Talented**  extension project  leveled text  leadership roles  intentional grouping  Targeted learning from assessment | **Students with 504 Plans**  breaks  chunking  preferential seating  visual reminders  restate/rephrase  check-in/check-out system  visual time  Teacher records/ student dictates |  |
| **Unit Duration: 15** | | |

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| --- | --- | --- |
| **STANDARD:**  **3-LS4-1 Biological Evolution: Unity and Diversity** | | |
| **Unit 7: Using Evidence to Understand Change in Environments** | | |
| **ESTABLISHED GOALS (INDICATOR #)** | **TRANSFER (How will this apply to their lives?)** | |
| 3-LS4-1: Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.  3-LS4-4: Make a claim about the merits of a solution to a problem caused when the environment changes and the types of plants and animals that live there may | *Students will be able to independently use their knowledge to…*   * Analyze the data from fossils to provide evidence of the organisms and the environments in which they lived long ago. * Make a claim about the merits of a solution to a problem caused when the environment changes and the types of plants and animals that live there may. | |
| **MEANING** | |
| UNDERSTANDINGS:   * Observable phenomena exist from very short to very long periods of time. * Science assumes consistent patterns in natural systems. * Some kinds of plants and animals that once lived on Earth are no longer found anywhere. * Fossils provide evidence about the types of organisms that lived long ago, and also about the nature of their environments. | ESSENTIAL QUESTIONS:   * *Part A: What do fossils tell us about the organisms and the environments in which they lived?* * *Part B: What happens to the plants and animals when the environment changes?* |
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| **Unit 7: Grade 3 - Lessons** | | |
| In this unit, students will study fossils or organisms that lived long ago. Students will use that understanding to make a claim about the merit of a solution to problem created by some environmental change. (Assessment is limited to one change.) Additionally, they will learn that solutions are limited by available resources constraints), and that the success of a solution is determined by considering the desired features of a solution (criteria). This process is outlined in greater detail in the previous section. Students gather evidence from fossils to learn about the types of organisms that lived long ago and the nature of their environments. As they learn about organisms from long ago, they come to understand that when the environment changes, some organisms survive and reproduce, some move to new locations, some move into the transformed environment, and some die. To begin the progression of learning in this unit, students need multiple opportunities to study fossils. If actual fossils are not available, pictures and diagrams found in books and other media sources can be used. Students should observe fossils of a variety of organisms, both plant and animal, and they should observe diagrams of fossils within layers of rock. As students examine each fossil, they should be asked to identify whether the organism lived on land or in water and to give evidence to support their thinking. As students examine diagrams of fossils in layers of rock, they should be asked to identify the type of environment that existed when the layers of rock were formed. Students should consider the types of organisms that are fossilized in the rock layers in order to provide evidence to support their thinking.  If the type of environment in which the fossil was found is different from the type of environment that might have existed when the organism lived (e.g., marine fossils found on dry land, or tropical plant fossils found in Arctic areas), this would provide the opportunity to ask students to think about the types of changes that might have occurred in the environment and what effects these changes might have had on the organisms that lived in the environment as it changed over time. As students observe and analyze fossils, they learn that fossils provide evidence about the types of organisms that lived long ago and the nature of their environments. They also learn that some kinds of plants and animals that once lived on Earth are no longer found anywhere, and that this could be a result of changes that occurred in the environment.  During this unit, students also learn that populations of organisms live in a variety of habitats, and change in those habitats affects the organisms living there. When the environment changes in ways that affect a place’s physical characteristics, temperature, or availability of resources, some organisms will survive and reproduce, some will move to new locations, others will move into the transformed environment, and others will die. Students will need the opportunity to engage in a portion of the engineering design process in order to investigate the merit of solutions to problems caused when the environment changes. This process should include the following steps:  Students brainstorm a list of environmental changes that might affect the organisms that live in the environment. This could include changes in   * Land characteristics, * Water distribution, * Temperature, * Food, * Other organisms.   As a class or in small groups, students define a problem that occurs when the environment changes. For example, if the distribution of water changes, the available water may no longer support the types of organisms that are found in the environment. As a class, determine criteria that can be used to weigh a possible solution’s viability. For example, the response (solution) to the problem should not result in the extinction of a species. Small groups conduct research, using books and other reliable media sources, to determine possible solutions/ways in which organisms can solve the problem. For example, if the available water supply is no longer adequate for the organisms in the environment, there are a number of ways in which organisms respond (i.e., solve the problem); these include:   * Plants do not grow as large as before (shorter plant, smaller or fewer leaves); * Fewer seeds germinate, thereby resulting in a smaller population; * Herd animals may move to another environment where the water supply is adequate; * Populations of some species may decrease, either through lower rate of reproduction or death; * Some populations completely die out; or * Other organisms (plants and animals) that require less water to survive may move into the environment.   Students make claims about the merit of each of the various responses (solutions) by organisms based on how well the responses meet criteria; students use research data as evidence to support their thinking. At every stage, communicating with peers is an important part of the design process. Students should identify cause-and-effect relationships throughout the process and use these relationships to explain the changes that might occur in the environment and in the populations of organisms that live there.  **Suggested Mystery Science Lessons:**  [Animals Through Time: Animal Survival and Heredity](https://mysteryscience.com/animals/animal-survival-heredity)  **Mystery 1:** Habitats and Environmental Change (Where Can You Find Whales in a Desert?)  **Mystery 2:** Structures & Adaptations, Fossil Evidence, Classification (How Do We Know What Dinosaurs Looked Like?)  **Mystery 3:** Fossil Evidence, Behavior (Can You Outrun a Dinosaur?)  **Suggested BetterLesson Unit:**  **Lesson 1:**[Fossils- Introductory Lesson](https://betterlesson.com/lesson/644262/fossils-introductory-lesson?from=breadcrumb_lesson) *SWBAT generate theories about how to identify a fossil (Petoskey stone).*  [**Lesson 2:** What is a Fossil?](https://betterlesson.com/lesson/638749/what-is-a-fossil?from=breadcrumb_lesson) *SWBAT use precise scientific vocabulary to define and explain fossils.*  [**Lesson 3:** What can we learn from the Bear-Dog?](https://betterlesson.com/lesson/632110/what-can-we-learn-from-the-bear-dog?from=breadcrumb_lesson) *SWBAT read about what scientists learn about ancient mammals from their fossils.*  [**Lesson 4:** Fossils of the US- Engage "Where can you find fossils?"](https://betterlesson.com/lesson/632109/fossils-of-the-united-states-engage-where-can-you-find-fossils?from=breadcrumb_lesson) *SWBAT draw conclusions about past environments using photographs*  [**Lesson 5:** Fossils of the US- Explore by State and Time Period](https://betterlesson.com/lesson/632111/fossils-of-the-united-states-explore-by-state-and-time-period?from=breadcrumb_lesson) *SWBAT use a database to collect examples of fossils that can be found in the state they chose to research. They will record the type, the era, and start to draw conclusions about possible environments.*  [**Lesson 6:** Fossils of the US- Elaborate, Present and Share](https://betterlesson.com/lesson/636427/fossils-of-the-united-states-elaborate-present-and-share?from=breadcrumb_lesson) *SWBAT present and elaborate upon the connections they made between the different state's fossils and past environments.*  [**Lesson 7:** Digging Up Fossils](https://betterlesson.com/lesson/639108/digging-up-fossils?from=breadcrumb_lesson) *SWBAT participate in a mock fossil dig and use a simple key to identify fossils from the Pliocene Age in North Carolina.*  [**Lesson 8:** Digging Up Fossils- Analysis](https://betterlesson.com/lesson/639179/digging-up-fossils-analysis?from=breadcrumb_lesson) *SWBAT write specific observations about the fossils they "discovered," form hypothesis about some of the fossils, and use a key to identify them.*(Performance Task) | | |
| **Science and Engineering Practices** | **Disciplinary Core Ideas** | **Crosscutting concepts** |
| Analyzing and Interpreting Data  • Analyze and interpret data to make sense of phenomena using logical reasoning. (3-LS4-1) Engaging in Argument from Evidence  • Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem. (3-LS4-4) Asking Questions and Defining Problems  • Define a simple design problem that can be solved through the development of an object, tool, process, or system and includes several criteria for success and constraints on materials, time, or cost. (3-5-ETS1-1) | LS4.A: Evidence of Common Ancestry and Diversity  • Some kinds of plants and animals that once lived on Earth are no longer found anywhere. (3-LS4- 1)  • Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments. (3-LS4-1) LS4.D: Biodiversity and Humans  • Populations live in a variety of habitats, and change in those habitats affects the organisms living there. (3-LS4-4) LS2.C: Ecosystem Dynamics, Functioning, and Resilience  • When the environment changes in ways that affect a place’s physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die.(secondary to 3-LS4-4) ETS1.A: Defining and Delimiting Engineering Problems  • Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. (3- 5-ETS1-1) | Scale, Proportion, and Quantity  • Observable phenomena exist from very short to very long time periods. (3-LS4-1) Systems and System Models  • A system can be described in terms of its components and their interactions. (3-LS4-4)  - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -  Connections to Engineering, Technology, and Applications of Science Interdependence of Engineering, Technology, and Science on Society and the Natural World  • Knowledge of relevant scientific concepts and research findings is important in engineering. (3- LS4-4)Influence of Science, Engineering, and Technology on Society and the Natural World  • People’s needs and wants change over time, as do their demands for new and improved technologies. (3-5-ETS1-1) Connections to Nature of Science Scientific Knowledge Assumes an Order and Consistency in Natural Systems  • Science assumes consistent patterns in natural systems. (3-LS4-1) |
| **District/School Formative Assessment Plan** | | **District/School Summative Assessment Plan** |
| Students who understand the concepts are able to:  • Observe that phenomena exist from very short to very long periods of time.  • Analyze and interpret data to make sense of phenomena using logical reasoning.  • Analyze and interpret data from fossils (e.g., type, size, distributions of fossil organisms) to provide evidence of the organisms and the environments in which they lived long ago. (Assessment does not include identification of specific fossils or present plants and animals. Assessment is limited to major fossil types and relative ages.) Examples of fossils and environments could include: Marine fossils found on dry land; Tropical plant fossils found in Arctic areas; or Fossils of extinct organisms.  **Animals Through Time: Animal Survival and Heredity:**  [Mystery 1: Habitats and Environmental Change](https://docs.google.com/document/d/1JcECYQfIkOamWHfgtHMBi75P5V5ix1ArY4Fhf072aos/edit?usp=sharing)  [Mystery 2: Structures and Adaptations, Fossil Evidence, Classification](https://docs.google.com/document/d/1QvAOrg2_l8tmQvVzsaEMEOjJdxwNgWi6pMPPN9f6Um0/edit?usp=sharing)  [Mystery 3: Fossil Evidence, Behavior](https://docs.google.com/document/d/1udGQljgcxqpvnyPsIoBqZQ2IL-JpV_oCtF7B-c0sM98/edit?usp=sharing) | | *Summative assessment is an opportunity for students to demonstrate mastery of the skills taught during a particular unit.*  ***(all resources are accessible on google drive)***  **Mystery Science Assessments:**  ***(all resources are accessible on google drive)***  [Animals Through Time](https://docs.google.com/document/d/1lpVrXi5K11usE627O6Skd8Xiwy6TdlUR-vxRK3cm70w/edit?usp=sharing) **(Also includes concepts from Unit 6)** |
| **Alternative Assessments** | | |
| **Evaluative Criteria** | **Assessment Evidence** | |
| **Suggested Performance Rubric:** Use the following or similar rubric to evaluate students’ performance on lesson assessments:   |  |  | | --- | --- | | **4 - Innovating:** | Advanced understanding and application of the standard | | **3 - Applying:** | Consistently applies skills independently | | **2 - Developing:** | Progressing towards independent application of skills | | **1 - Beginning:** | Early stages of development, need assistance | | Suggested Performance Tasks include but are not limited to:  **(Better Lesson suggestions are referenced above as well.)**  **Performance Task:** [Lesson 8: Digging Up Fossils- Analysis](https://betterlesson.com/lesson/639179/digging-up-fossils-analysis?from=breadcrumb_lesson) SWBAT write specific observations about the fossils they "discovered," form hypotheses about some of the fossils, and use a key to identify them. | |
| **District/School Texts** | | **District/School Supplementary Resources** |
| Haddon Heights - Unit Kits for Science Labs and References  Lawnside - Houghton Mifflin Harcourt : Science Fusion  Merchantville- Exploring Science (National Geographic Learning) | | **-Scholastic News**  **-Brain POP**   * [**Fossils**](https://www.brainpop.com/science/diversityoflife/fossils/) * [**Dinosaurs**](https://www.brainpop.com/science/diversityoflife/dinosaurs/) * [**Carbon Dating**](https://www.brainpop.com/technology/scienceandindustry/carbondating/)   **-NewsELA**  **-Read Works**  **-Additional Online Resources**   * [**Bill Nye- Fossils**](https://www.youtube.com/watch?v=r9DTG8oLrEc) * [**What Is a Fossil?**](https://www.youtube.com/watch?v=sgPnnzou0og) |
| [**Interdisciplinary Connections**](http://www.state.nj.us/education/cccs/) | | |
| **ELA**  Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-LS4-4)  RI.3.1 Determine the main idea of a text; recount the key details and explain how they support the main idea. (3-LS4-1),(3-LS4-4)  RI.3.2 Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. (3-LS4-1),(3-LS4-4)  RI.3.3 Write opinion pieces on topics or texts, supporting a point of view with reasons. (3-LS4-1),(3-LS4- 4)  W.3.1 Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (3-LS4-1),(3-LS4-4)  W.3.2 Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. (3-LS4-1)  W.3.8 Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic. (3-5-ETS1-1)  W.5.7 Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. (3-5-ETS1-1)  W.5.8 Draw evidence from literary or informational texts to support analysis, reflection, and research. | **Math**  Reason abstractly and quantitatively. (3-LS4-1),(3-LS4-4), (3-5- ETS1-1)  MP.2 Model with mathematics. (3-LS4-1),(3-LS4-4), (3-5-ETS1-1)  MP.4 Use appropriate tools strategically. (3-LS4-1), (3-5-ETS1-1)  MP.5 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. (3-LS4-2),(3-LS4-3) 3.  MD.B.3 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters. (3-LS4- 1) 3.  MD.B.4 Operations and Algebraic Thinking (3-ETS1-1) 3-5.OA | **21st Century Skills/Career Education**  CRP2: Apply appropriate academic and technical skills.  CRP4: Communicate clearly and effectively and with reason.  CRP11: Use technology to enhance productivity. |
| **Modifications and Accommodations** | | |
| **Special Education Students**  Small group  Direct instruction  restate/rephrase  graphic organizers  modified assignments  chunking  leveled text  intentional grouping  read text  extended time  breaks  Teacher records/ student dictates | **English Language Learners**  Labels  word banks  visuals  student friendly definitions  extended time  chunking  intentional grouping | **Students at Risk of School Failure**  leveled text  graphic organizers  modified assignments  kinesthetic activities  restate/rephrase  chunking  intentional grouping |
| **Gifted and Talented**  extension project  leveled text  leadership roles  intentional grouping  Targeted learning from assessment | **Students with 504 Plans**  breaks  chunking  preferential seating  visual reminders  restate/rephrase  check-in/check-out system  visual time  Teacher records/ student dictates |  |
| **Unit Duration: 15** | | |