DEPARTMENT : Science COURSE : Grade 3

Curriculum Development Timeline

School: Township of Ocean Elementary Schools

Course: Science, Grade 3

Department: Science

Board Approval	Supervisor	Notes
February 2009	Jessica Shaw	Born Date
June 2011	Christine Picerno	Revisions
August 2017	Christine Picerno	Revisions
March 2019	Christine Picerno	Review
August 2021	Rich Steckhahn	Alignment to Standards & Revisions
August 2022	Patrick Sullivan	Incorporate State Mandates

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DEPARTMENT : Science

COURSE : Grade 3

Township of Ocean Pacing Guide			
Week	Marking Period 1	**Week**	Marking Period 3
1	Earth Sciences: Weather and Climate	21	Life Sciences: Inheritance and Variation of Traits: Life Cycles and Traits
2	Earth Sciences: Weather and Climate	22	Life Sciences: Inheritance and Variation of Traits: Life Cycles and Traits
3	Earth Sciences: Weather and Climate	23	Life Sciences: Inheritance and Variation of Traits: Life Cycles and Traits
4	Earth Sciences: Weather and Climate	24	Life Sciences: Interdependent Relationships in Ecosystems
5	Earth Sciences: Weather and Climate	25	Life Sciences: Interdependent Relationships in Ecosystems
6	Earth Sciences: Weather and Climate	26	Life Sciences: Interdependent Relationships in Ecosystems
7	Earth Sciences: Weather and Climate	27	Life Sciences: Interdependent Relationships in Ecosystems
8	Earth Sciences: Weather and Climate	28	Life Sciences: Interdependent Relationships in Ecosystems
9	Life Sciences: Inheritance and Variation of Traits: Life Cycles and Traits	29	Life Sciences: Interdependent Relationships in Ecosystems
10	Life Sciences: Inheritance and Variation of Traits: Life Cycles and Traits	30	Life Sciences: Interdependent Relationships in Ecosystems
Week	Marking Period 2	**Week**	Marking Period 4
11	Life Sciences: Inheritance and Variation of Traits: Life Cycles and Traits	31	Life Sciences: Interdependent Relationships in Ecosystems
12	Life Sciences: Inheritance and Variation of Traits: Life Cycles and Traits	32	Physical Science: Forces and Motion
13	Life Sciences: Inheritance and Variation of Traits: Life Cycles and Traits	33	Physical Science: Forces and Motion
14	Life Sciences: Inheritance and Variation of Traits: Life Cycles and Traits	34	Physical Science: Forces and Motion
15	Life Sciences: Inheritance and Variation of Traits: Life Cycles and Traits	35	Physical Science: Forces and Motion
16	Life Sciences: Inheritance and Variation of Traits: Life Cycles and Traits	36	Physical Science: Forces and Motion
17	Life Sciences: Inheritance and Variation of Traits: Life Cycles and Traits	37	Physical Science: Forces and Motion
18	Life Sciences: Inheritance and Variation of Traits: Life Cycles and Traits	38	Physical Science: Forces and Motion
19	Life Sciences: Inheritance and Variation of Traits: Life Cycles and Traits	39	Physical Science: Forces and Motion

Home of the Spartans!
#spartanlegacy

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20	Life Sciences: Inheritance and Variation of Traits: Life Cycles and Traits	40	Physical Science: Forces and Motion

Climate Change: Weather and Climate (NJSLS-S: 3-ESS3-1)

Core Instructional & Supplemental Materials including various levels of Texts
Mystery Science Lessons, Generation Genius, Wonders Reading Program, Brain Pop, Pebble Go, PBS Kids, Interactive Games/Demonstrations, and various trade books related to unit topics.

Time Frame	8 weeks

Topic

Weather and Climate

Alignment to Standards

3-ESS2-1 Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. *[Clarification Statement: Examples of data could include average temperature, precipitation, and wind direction.] [Assessment Boundary: Assessment of graphical displays is limited to pictographs and bar graphs. Assessment does not include climate change.]*

3-ESS2-2 Obtain and combine information to describe climates in different regions of the world.

3-ESS3-1 Make a claim about the merit of a design solution that reduces the impacts of climate change and/or a weather-related hazard. *[Clarification Statement: Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, and lightning rods.]*

3-5-ETS1-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Learning Objectives and Activities

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DEPARTMENT : Science COURSE : Grade 3

Students will understand that…

- Climate describes an area's typical weather conditions and the changes over many years.

- Climates in different regions of the world can follow patterns.
- Scientists record patterns of the weather in order to make predictions about what kind of weather might happen next.
- There are ways to design solutions that reduce the impact of a weather-related hazard.
- Many different kinds of natural hazards occur in nature.
- How climate change may affect the planet's overall weather

Activities

Mystery Science

- Stormy Skies

Generation Genius

- Extreme Weather Solutions
- Weather vs. Climate

NASA Climate Kids

Weather+Climate

ELA Connections: Wonders

- Unit 3 Week 3: Discoveries: What do we know about Earth and Its Neighbors?
- Unit 6 Week 2: Weather: How can weather affect us?

YouTube video clips to build background

- Billy Blue Hair - What is the Water Cycle and Why Does it Rain?
- GoNoodle Water Cycle
- Weather and Climate- StudyJams
- Where does water come from?
- Weather and Climate
- Weather vs. Climate
- Be a weather watcher
- Climate Change 101 with Bill Nye | National Geographic
- Where do snowflakes come from?
- What are clouds made of?

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Weather related hazards (video clips)

- Severe Weather
- What causes thunder and lightening
- What Causes Earthquakes?
- Tornado Facts for Kids
- What is a blizzard?
- What is a tornado?

BrainPopJr.com

- Water cycle
- Temperature

BrainPop.com

- Climate Change
- Water Cycle
- Clouds
- Weather
- Natural Disasters
- Tornadoes
- Thunderstorms
- Hurricanes

Flocabulary.com

- Hurricanes
- Water Cycle
- Weather

Pebblego.com

- What is weather?
- Climate
- Wind

Prepared Lesson Ideas

- Websites for simple research and information gathering.
  - What is Water Pollution?
  - Tree House Weather Kids (text is read aloud)
- Weather Scope- make weather instruments, gather data- learning log, etc.
- Weather, Climate, & Water lessons
- BetterLesson.com Earth & Spaces Sciences (multiple lessons to choose from)
- Cloud Investigation- hands on activity, chart for data collection, assessment
- STEAM Weather Activities- hands on- get crafty and reach your students!

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Literature Resources

- Flash, Crash, Rumble, and Roll by Franklyn Branley
- Twister by Darleen Bailey Beard
- Cloud Dance by Thomas Locker
- Tornado Alert by Franklyn Branley
- Down Comes the Rain by Franklyn Branley
- Weather Words and What They Mean by Gail Gibbons

Assessments

Formative

- Label diagram "Returning Raindrop" Quiz
- 4 Types of Clouds Quizlet

Summative

- Water cycle assessment
  - Each student will create a poster for display showing the water cycle in their favorite outdoors place. It may be their home or a vacation spot. The key concepts should be shown in the poster. May use photos cut from magazines in combination with their own artwork to compose the poster.
- Label Water Cycle- Google Drawing Test
- 2nd Version- Label Water Cycle Test
- Mystery Science Assessments
  - The World of Weather- Mystery 1: Weather Patterns, Water Cycle Test
  - The World of Weather- Mystery 2: Climate Test
  - The World of Weather- Mystery 3: Climate, Typical Weather, Geography
- 4 Types of Clouds Labeling- Google Drawings Assessment
- Climate & Weather Google Forms Assessment

Benchmark

- Engineering Design Process Rubric Assessment 1

Alternative Assessment

- Weather Scope- make weather instruments, gather data- learning log, etc.
- Cloud Investigation- hands on activity, chart for data collection, assessment

Interdisciplinary Connections

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NJSLS: ELA

- **RI.3.1** Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-LS2-1)
- **RI.3.1** Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-ESS2-2), (3-ESS3-1)
- **RI.3.9** Compare and contrast the most important points and key details presented in two texts on the same topic. (3-ESS2-2)
- **RI.5.1** Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (3-5-ETS1-2)
- **RI.5.7** Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. (3-5-ETS1-2)
- **RI.5.9** Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (3-5-ETS1-2)
- **W.3.7** Conduct short research projects that build knowledge about a topic. (3-ESS3-1)
- **W.3.8** Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. (3-ESS2-2)
- **W.5.7** Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic. (3-5-ETS1-1), (3-5-ETS1-3)
- **W.5.8** 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), (3-5-ETS1-3)
- **W.5.9** Draw evidence from literary or informational texts to support analysis, reflection, and research. (3-5- ETS1-1), (3-5-ETS1-3)

NJSLS: Math

- **MP.2** Reason abstractly and quantitatively. (3-ESS2-1), (3-ESS2-2), (3-ESS3-1), (3-5-ETS1-1), (3-5-ETS1-2), (3-5-ETS1-3)
- **MP.4** Model with mathematics. (3-ESS2-1), (3-ESS2-2), (3-ESS3-1), (3-5-ETS1-1), (3-5-ETS1-2), (3-5-ETS1-3)
- **MP.5** Use appropriate tools strategically. (3-ESS2-1), (3-5-ETS1-1), (3-5-ETS1-2), (3-5-ETS1-3)
- **3.MD.A.2** 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.B.3** 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)
- **3-5.OA** Operations and Algebraic Thinking (3-5-ETS1-1), (3-5-ETS1-2)

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NJSLS: Computer Science and Design Thinking

- **8.1.5.IC.1:** Identify computing technologies that have impacted how individuals live and work and describe the factors that influenced the changes.
- **8.1.5.IC.2:** Identify possible ways to improve the accessibility and usability of computing technologies to address the diverse needs and wants of users.
- **8.1.5.DA.1:** Collect, organize, and display data in order to highlight relationships or support a claim.
- **8.1.5.DA.3:** Organize and present collected data visually to communicate insights gained from different views of the data.
- **8.1.5.DA.4:** Organize and present climate change data visually to highlight relationships or support a claim.
- **8.1.5.DA.5:** Propose cause and effect relationships, predict outcomes, or communicate ideas using data.

Career Readiness, Life Literacies, and Key Skills

Technology Integration

- **9.4.5.CI.1:** Use appropriate communication technologies to collaborate with individuals with diverse perspectives about a local and/or global climate change issue and deliberate about possible solutions.
- **9.4.5.CI.2:** Investigate a persistent local or global issue, such as climate change, and collaborate with individuals with diverse perspectives to improve upon current actions designed to address the issue.
- **9.4.5.CT.1:** Identify and gather relevant data that will aid in the problem-solving process.
- **9.4.5.DC.8:** Propose ways local and global communities can engage digitally to participate in and promote climate action.
- **9.4.5.IML.2:** Create a visual representation to organize information about a problem or issue.

Career Education

CRP 6. SW demonstrate creativity and innovation while working on Weather Scope- make weather instruments, gather data- learning log, etc. AND Cloud Investigation.
CRP 8. SW utilize critical thinking to make sense of Mystery Science problems and persevere in solving them.

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Time Frame	8 weeks

Topic

Interdependent Relationships in Ecosystems

Alignment to Standards

3-LS2-1 - Construct an argument that some animals form groups that help members survive.

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. *[Clarification Statement: Patterns are the similarities and differences in traits shared between offspring and their parents, or among siblings. Emphasis is on organisms other than humans.] [Assessment Boundary: Assessment does not include genetic mechanisms of inheritance and prediction of traits. Assessment is limited to non-human examples.]*

3-LS3-2 Use evidence to support the explanation that traits can be influenced by the environment. *[Clarification Statement: Examples of the environment affecting a trait could include normally tall plants grown with insufficient water are stunted; and, a pet dog that is given too much food and little exercise may become overweight.].*

3-LS4-1 - Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago. *[Clarification Statement: Examples of data could include type, size, and distributions of fossil organisms. Examples of fossils and environments could include marine fossils found on dry land, tropical plant fossils found in Arctic areas, and fossils of extinct organisms.] [Assessment Boundary: Assessment does not include identification of specific fossils or present plants and animals. Assessment is limited to major fossil types and relative ages.]*

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. *[Clarification Statement: Examples of cause and effect relationships could be plants that have larger thorns than other plants may be less likely to be eaten by predators; and, animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring.]*

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. *[Clarification Statement: Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other.]*

3-LS4-4 - Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change. *[Clarification Statement: Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms.] [Assessment Boundary: Assessment is limited to a single environmental change. Assessment does not include the greenhouse effect or climate change.]*

3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

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Learning Objectives and Activities

Students will understand that…

- Some animals form groups that help group members survive.
- Data from fossils can provide evidence of the organisms and the environments in which they lived long ago.
- In a particular habitat some organisms can survive well, while some survive less well, and others cannot survive at all.
- When an environment changes, the types of plants and animals that live in it may change, and a variety of solutions may be used to solve this problem. Each of these possibilities may have advantages and disadvantages.
- Being part of a group helps animals obtain food, defend themselves, and cope with changes.
- Some kinds of plants and animals that once lived on Earth are no longer found anywhere.
- Explain with evidence how some habitats allow animals to survive or die out.
- Environmental changes cause organisms to survive and reproduce, move to new locations, and die out.
- Animals live in a variety of habitats and change in those habitats to fit in them.

Activities

Mystery Science

- Animals Through Time

Generation Genius

- Animal Group Behavior
- Animal & Plant Life Cycles
- Ecosystems
- Adaptations and the Environment
- Fossils & Extinction
- Earth's Landscapes
- Variation of Traits

ELA Connection: Wonders

- Unit 2 Week 1: Cooperation: Why is working together a good way to solve a problem?
- Unit 2 Week 4: Survival: How can People help animals survive?
- Unit 4 Week 3: Adaptations: How do animals adapt to challenges in their habitat?
- Unit 5 Week 2: Reuse & Recycle: How can we reuse what we already have?

YouTube video clips to build background

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- Amazing Animal Groups
- Can wildlife adapt to climate change?
- Animals With Winter Coats
- How do Whales, Penguins, and Polar Bears Keep Warm?
- study jams - ECOSYSTEMS
- study jams- Adaptations
- Dig Into Paleontology
- What's a Fossil?

BrainPopJr.com
- Fossils
- Plant Adaptations

BrainPop.com
- Fossils

Pebblego.com
- Adaptations
- Animals Affect Habitats
- Endangered and Threatened Animals

Flocabulary.com (subscription required)
- Adaptation

Online Books (with short quizzes)
- *Earth Science Rocks! Fossils* by Chris Bowman
- *Figuring Out Fossils* by Sally M. Walker
- *Animal Adaptations* by Louise Spilsbury & Richard Spilsbury

Prepared Lesson Ideas
- "Fun with Fossils" -excellent lesson w/video clips, student project, assessment
- **Website** for simple research and information gathering- could be a great source for student led/independent study to help build background eschooltoday.com
- Heredity Lesson- hands on activity

Assessments

Formative
- **Mystery Science Assessments:**
  - Animals Through Time: Mystery 1: Habitats & Environment Change Quiz
  - Animals Through Time: Mystery 2: Structures & Adaptation; Fossil Evidence Quiz
  - Animals Through Time: Mystery 3: Fossil Evidence, Behavior Quiz

- Animals Through Time: Mystery 4: Heredity, Variation, & Selection Quiz
- Animals Through Time: Mystery 5: Heredity & Selection Quiz

Summative

- **Prepared Lesson Idea" Assessment**
  - Animals Adapt to Their Habitats (conclusion to lesson)- Draw the animal that you imagine was in the box you received from the explorer. Describe the physical characteristics of the animal and how it is specially adapted to be successful in its habitat. Describe the habitat from which you think it comes.
  - How a Fossil Forms- Google Slide Assessment (Teacher make a "copy" and save to your Drive before posting/assigning to individual classes)

Benchmark

- Engineering Design Process Rubric Assessment 2

Alternative Assessment

- "Fun with Fossils" -excellent lesson w/video clips, student project, assessment

Interdisciplinary Connections

NJSLS: ELA

- **RI.3.1** Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-LS4-1), (3-LS4-2), (3-LS4-3), (3-LS4-4), (3-LS2-1)
- **RI.3.2** Determine the main idea of a text; recount the key details and explain how they support the main idea. (3-LS4-1), (3-LS4-2), (3-LS4-3), (3-LS4-4), (3-LS3-1), (3-LS3-2)
- **RI.3.3** 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-LS4-2), (3-LS4-3), (3-LS4-4), (3-LS3-1), (3-LS3-2), (3-LS2- 1)
- **RI.5.1** Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (3-5-ETS1-2)
- **RI.5.7** Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. (3-5-ETS1-2)
- **RI.5.9** Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (3-5-ETS1-2)
- **W.3.1** Write opinion pieces on topics or texts, supporting a point of view with reasons. (3-LS4-1), (3-LS4-3), (3-LS4-4), (3-LS2-1)
- **W.3.2** Write informative/explanatory texts to examine a topic and convey ideas and

information clearly. (3- LS4-1), (3-LS4-2), (3-LS4-3), (3-LS4-4), (3-LS3-1), (3-LS3-2)

- **W.3.8** 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)
- **SL.3.4** 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-LS4-2), (3-LS4-3), (3-LS4-4), (3-LS3-1), (3-LS3-2)

NJSLS: **Math**

- **MP.2** Reason abstractly and quantitatively. (3-LS4-1), (3-LS4-2), (3-LS4-3), (3-LS4-4), (3-LS3-1), (3-LS3-2), (3-5-ETS1-2)
- **MP.4** Model with mathematics. (3-LS4-1), (3-LS4-2), (3-LS4-3), (3-LS4-4), (3-LS3-1), (3-LS3-2), (3-LS2-1), (3-5-ETS1-2)
- **MP.5** Use appropriate tools strategically. (3-LS4-1), (3-5-ETS1-2)
- **3.MD.B.3** 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.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-LS4-1), (3-LS3-1), (3-LS3-2)
- **3.NBT** Number and Operations in Base Ten (3-LS2-1)
- **3-5.OA** Operations and Algebraic Thinking (3-5-ETS1-2)

NJSLS: Computer Science and Design Thinking

- **8.1.5.DA.1:** Collect, organize, and display data in order to highlight relationships or support a claim.
- **8.1.5.DA.5:** Propose cause and effect relationships, predict outcomes, or communicate ideas using data.

Career Readiness, Life Literacies, and Key Skills

Technology Integration

- **9.4.5.CT.2:** Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem.
- **9.4.5.CT.4:** Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global.
- **9.4.5.IML.6:** Use appropriate sources of information from diverse sources, contexts, disciplines, and cultures to answer questions.

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- **9.4.5.TL.5:** Collaborate digitally to produce an artifact.

Career Education

CRP 6. SW demonstrate creativity and innovation when working on the Heredity Lesson- hands on activity.
CRP 8. SW utilize critical thinking to make sense of Mystery Science problems and persevere in solving them.
CRP 11. SW use technology to enhance productivity while accessing the following online resources:

- Amazing Animal Groups
- Can wildlife adapt to climate change?
- Animals With Winter Coats
- How do Whales, Penguins, and Polar Bears Keep Warm?
- study jams - ECOSYSTEMS
- study jams- Adaptations
- Dig Into Paleontology
- What's a Fossil?
- Bill Nye the Science Guy- Biodiversity (Ecosystem Support)
- Bill Nye the Science Guy- Fossils

Time Frame	15 weeks

Topic

Inheritance and Variation of Traits: Life Cycles and Traits

Alignment to Standards

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. *[Clarification Statement: Changes organisms go through during their life form a pattern.] [Assessment Boundary: Assessment of plant life cycles is limited to those of flowering plants. Assessment does not include details of human reproduction.]*

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. *[Clarification Statement: Patterns are the similarities and differences in traits shared between offspring and their parents, or among siblings. Emphasis is on organisms other than humans.] [Assessment Boundary: Assessment does not include genetic mechanisms of inheritance and prediction of traits. Assessment is limited to non-human examples.]*

Learning Objectives and Activities

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Students will understand that…

- Organisms have unique and diverse life cycles but they all have these things in common: birth, growth, reproduction, and death.
- Data can provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.
- Evidence supports the explanation that traits can be influenced by the environment.
- Traits of plants and animals can change to adapt to the environment; changes can range from diet to learning abilities.
- Evidence can be used 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.

Activities

Mystery Science

- Powers of Flowers

Generation Genius

- Animal & Plant Life Cycles
- Ecosystems
- Adaptations and the Environment
- Fossils & Extinction
- Earth's Landscapes
- Variation of Traits

ELA Connection: Wonders

- Unit 3 Week 1: Be Unique: What makes different animals unique?
- Unit 3 Week 4: New Ideas: What ideas can we get from nature?
- Unit 4 Week 1: Choices: What choices are good for us?
- Unit 6 Week 4: Animals and You: How can learning about animals help you respect them?

YouTube video clips to build background

- How Does A Seed Become A Plant?
- Grow Your Own Plants! (Part 1)
- What Happened to Our Plants? (Part 2)
- How a Caterpillar Becomes a Butterfly
- Salmon Parents Are Amazing! - Salmon Life Cycle
- What is a trait?
- Heredity

Online Books: (with short quizzes)

- *Animal Life Cycles: Growing and changing* by Bobbie Kalman

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- *Life Cycles of Insects* by Molly Aloian

Prepared Lessons

- http://www.eschooltoday.com/ **Website** for simple research and information gathering- could be a great source for student led/independent study to help build background

BrainPopJr.com

- Plant Life Cycle
- Butterflies
- Frogs

BrainPop.com

- Ecosystems

Pebblego.com

- Heredity
- Living or Nonliving

Flocabuluary.com

- ❖ Life Cycles
- ❖ Pollination
- ❖ Useful websites

Assessments

Formative

- Plant Life Cycle
- Butterflies
- Frogs

Summative

- **Mystery Science Assessments:**
  - Power of Flowers: Mystery 1: Reproduction Test
  - Power of Flowers: Mystery 3: Inheritance, Traits, & Selection Test

Interdisciplinary Connections

NJSLS: ELA

- **RI.3.2** Determine the main idea of a text; recount the key details and explain how they support the main idea. (3-LS3-1)
- **RI.3.3** 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)

- **RI.3.7** Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur). (3-LS1-1)
- **SL.3.4** 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)
- **SL.3.5** Create engaging audio recordings of stories or poems that demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details. (3-LS1-1)
- **W.3.2** Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (3-LS3-1)

NJSLS: **Math**

- **MP.2** Reason abstractly and quantitatively. (3-LS3-1)
- **MP.4** Model with mathematics. (3-LS1-1), (3-LS3-1)
- **3.NBT** Number and Operations in Base Ten (3-LS1-1)
- **3.NF** Number and Operations—Fractions (3-LS1-1)
- **3.MD.B.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)

NJSLS: Computer Science and Design Thinking

- **8.1.5.DA.1:** Collect, organize, and display data in order to highlight relationships or support a claim.
- **8.1.5.DA.5:** Propose cause and effect relationships, predict outcomes, or communicate ideas using data.

Career Readiness, Life Literacies, and Key Skills

Technology Integration

- **9.4.5.IML.3:** Represent the same data in multiple visual formats in order to tell a story about the data.
- **9.4.5.IML.6:** Use appropriate sources of information from diverse sources, contexts, disciplines, and cultures to answer questions

Career Education

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Office of Teaching and Learning

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DEPARTMENT : Science COURSE : Grade 3

CRP 8. SW utilize critical thinking to make sense of Mystery Science problems and persevere in solving them.
CRP 11. SW use technology to enhance productivity when accessing the following online resources:

- How Does A Seed Become A Plant?
- Grow Your Own Plants! (Part 1)
- What Happened to Our Plants? (Part 2)
- How a Caterpillar Becomes a Butterfly
- Salmon Parents Are Amazing!- Salmon Life Cycle
- Bill Nye the Science Guy- Life Cycles
- What is a trait?
- Heredity

Time Frame	9 weeks

Topic

Forces and Motion

Alignment to Standards

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. *[Clarification Statement: Examples could include an unbalanced force on one side of a ball can make it start moving; and, balanced forces pushing on a box from both sides will not produce any motion at all. Qualitative and conceptual, but not quantitative addition of forces, are used at this level. [Assessment Boundary: Assessment is limited to one variable at a time: number, size, or direction of forces. Assessment does not include quantitative force size, only qualitative and relative. Assessment is limited to gravity being addressed as a force that pulls objects down.]*

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. *[Clarification Statement: Examples of motion with a predictable pattern could include a child swinging in a swing, a ball rolling back and forth in a bowl, and two children on a see-saw.] [Assessment Boundary: Assessment does not include technical terms such as period and frequency.]*

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. *[Clarification Statement: Examples of an electric force could include the force on hair from an electrically charged balloon and the electrical forces between a charged rod and pieces of paper; examples of a magnetic force could include the force between two permanent magnets, the force between an electromagnet and steel paperclips, and the force exerted by one magnet versus the force exerted by two magnets. Examples of cause and effect relationships could include how the distance between objects affects strength of the force and how the orientation of magnets affects the direction of the magnetic force.] [Assessment Boundary: Assessment is limited to forces produced by objects that can be manipulated by students, and electrical interactions are limited to static electricity.]*

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3-PS2-4 - Define a simple design problem that can be solved by applying scientific ideas about magnets. *[Clarification Statement: Examples of problems could include constructing a latch to keep a door shut and creating a device to keep two moving objects from touching each other.]*

3-5-ETS1-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Learning Objectives and Activities

Students will understand that…

- A force can be a push or a pull.
- An investigation can provide evidence of the effects of balanced and unbalanced forces on the motion of an object.
- Observations and/or measurements of an object's motion can be used to provide evidence that a pattern can be used to predict future motion.
- There is a cause and effect relationship of electrical and magnetic interactions between two objects not in contact with each other.
- A simple design problem can be solved by applying scientific ideas about magnets.
- Objects remain in motion or at rest until another force changes the direction or changes the speed.
- Friction slows objects down.
- Some changes in motion require objects to touch and some do not require objects to touch (electrical or magnetic forces).
- Magnets are attracted to some objects that contain certain metals.
- Static electricity between hair and a balloon is an electrical force.

Activities

Mystery Science

- Invisible Forces

ELA Connection: Wonders

- Unit 1 Week 4: Inventions: How can problem solving lead to new ideas?
- Unit 2 Week 5: Figure It Out: How do people figure things out?
- Unit 4 Week 4: Flight: How are people able to fly?
- Unit 5 Week 5: Energy: What are different kinds of energy?

YouTube video clips to build background

DEPARTMENT : Science COURSE : Grade 3

- Friction: Slipping, Sliding Science!
- Defining Gravity
- Let's Get Rolling!
- Swings, Slides, and Science
- Need a Life, Try a Pulley
- What Makes Bridges So Strong- supports "bridges so strong" *Mystery Science
- Balanced and Unbalanced Forces- supports tug of war *Mystery Science
- Force & Motion
- Static Electricity:The Sticky Balloon Trick
- Bill Nye the Science Guy Magnetism

Books Online (with short quizzes at the end of each book)

- *Magnetism* by Mari Schuh
- *Pushing and Pulling* by Natalie Hyde
- *Gravity* by Kay Manolis

Prepared Lessons

- http://www.eschooltoday.com/ **Website** for simple research and information gathering- could be a great source for student led/independent study to help build background
- Measuring Friction (can be used as performance assessment)- make a copy and save to your own google drive.

Pebblego.com

- Kinds of Forces
- What is Motion?
- Electricity
- Magnetism
- Friction
- Gravity

Flocabulary.com

- Force and Motion
- Gravity
- Motion
- Static Electricity

BrainPopJr.com

- Magnets
- Push & Pull

Assessments

DEPARTMENT : Science COURSE : Grade 3

Formative

- Forces and Motion Google Forms Quiz

Summative

- **Mystery Science Assessments:**
  - Invisible Forces: Mystery 1: Forces Test
  - Invisible Forces: Mystery 2: Balance of Forces, Engineering Test
  - Invisible Forces: Mystery 3: Balance of Forces, Friction Test
  - Invisible Forces: Mystery 4: Magnets, Forces Test

Benchmark

- Engineering Design Process Rubric Assessment 3

Alternative Assessments

- http://www.eschooltoday.com/ **Website** for simple research and information gathering - for student led/independent study to help build background
- Measuring Friction (can be used as performance assessment)

Interdisciplinary Connections

NJSLS: ELA

- **RI.3.1** Ask and answer questions, and make relevant connections to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-PS2-1), (3-PS2-3)
- **RI.3.3** 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.3.8** Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence) to support specific points the author makes in a text. (3-PS2-3)
- **RI.5.1** Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (3-5-ETS1-2)
- **RI.5.7** Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. (3-5-ETS1-2)
- **RI.5.9** Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (3-5-ETS1-2)
- **W.3.7** Conduct short research projects that build knowledge about a topic. (3-PS2-1), (3-PS2-2)
- **W.3.8** Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. (3-PS2-1), (3-PS2-2)

DEPARTMENT : Science COURSE : Grade 3

- **W.5.7** Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic. (3-5-ETS1-1), (3-5-ETS1-3)
- **W.5.8** 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), (3-5-ETS1-3)
- **W.5.9** Draw evidence from literary or informational texts to support analysis, reflection, and research. (3-5- ETS1-1), (3-5-ETS1-3)
- **SL.3.3** Ask and answer questions about information from a speaker, offering appropriate elaboration and detail. (3-PS2-3)

NJSLS: **Math**

- **MP.2** Reason abstractly and quantitatively. (3-PS2-1), (3-5-ETS1-1), (3-5-ETS1-2), (3-5-ETS1-3)
- **MP.4** Model with mathematics. (3-5-ETS1-1), (3-5-ETS1-2), (3-5-ETS1-3)
- **MP.5** Use appropriate tools strategically. (3-PS2-1), (3-5-ETS1-1), (3-5-ETS1-2), (3-5-ETS1-3)
- **3.MD.A.2** 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-PS2-1)
- **3-5.OA** Operations and Algebraic Thinking (3-5-ETS1-1), (3-5-ETS1-2)

NJSLS: Computer Science and Design Thinking

- **8.1.5.IC.1:** Identify computing technologies that have impacted how individuals live and work and describe the factors that influenced the changes.
- **8.1.5.IC.2:** Identify possible ways to improve the accessibility and usability of computing technologies to address the diverse needs and wants of users.
- **8.1.5.DA.1:** Collect, organize, and display data in order to highlight relationships or support a claim.
- **8.1.5.DA.3:** Organize and present collected data visually to communicate insights gained from different views of the data.
- **8.1.5.DA.5:** Propose cause and effect relationships, predict outcomes, or communicate ideas using data.

Career Readiness, Life Literacies, and Key Skills

- **9.2.5.CAP.4:** Explain the reasons why some jobs and careers require specific training, skills, and certification (e.g., life guards, child care, medicine, education) and examples of these requirements.

Technology Integration

DEPARTMENT : Science COURSE : Grade 3

- **9.4.5.CI.3:** Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity.
- **9.4.5.CI.4:** Research the development process of a product and identify the role of failure as a part of the creative process.
- **9.4.5.CT.3:** Describe how digital tools and technology may be used to solve problems.

Career Education

CRP 8. SW utilize critical thinking to make sense of problems and persevere in solving them by completing the Mystery Science challenge.
CRP 11. SW use technology to enhance productivity by accessing the following online resources:

- Kinds of Forces
- What is Motion?
- Electricity
- Magnetism
- Friction
- Gravity

Modifications (ELL, Special Education, At Risk Students, Gifted & Talented, & 504 Plans)

ELL:

- Work toward longer passages as skills in English increase
- Use visuals
- Introduce key vocabulary before lesson
- Teacher models reading aloud daily
- Provide peer tutoring
- Use of Bilingual Dictionary
- Guided notes and/or scaffold outline for written assignments
- Provide students with English Learner leveled readers.

Supports for Students With IEPs:

- Allow extra time to complete assignments or tests
- Guided notes and/or scaffold outline for written assignments
- Work in a small group
- Allow answers to be given orally or dictated
- Use large print books, Braille, or books on CD (digital text)
- Follow all IEP modifications

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At-Risk Students:

- Guided notes and/or scaffold outline for written assignments
- Introduce key vocabulary before lesson
- Work in a small group
- Lesson taught again using a differentiated approach
- Allow answers to be given orally or dictated
- Use visuals / Anchor Charts
- Leveled texts according to ability

Gifted and Talented:

- Create an enhanced set of introductory activities (e.g. advance organizers, concept maps, concept puzzles)
- Provide options, alternatives and choices to differentiate and broaden the curriculum
- Organize and offer flexible small group learning activities
- Provide whole group enrichment explorations
- Teach cognitive and methodological skills
- Use center, stations, or contracts
- Organize integrated problem-solving simulations
- Propose interest-based extension activities
- Expose students to beyond level texts.

Supports for Students With 504 Plans:

- Follow all the 504 plan modifications
- Text to speech/audio recorded selections
- Amplification system as needed
- Leveled texts according to ability
- Fine motor skill stations embedded in rotation as needed
- Modified or constrained spelling word lists
- Provide anchor charts with high frequency words and phonemic patterns