Grade 3 Science Curriculum Overview

Content Area: **Science**
Course(s): **SCIENCE**
Time Period:
Length: **Academic Year**
Status: **Published**

Title Page, Table of Contents, Statement of purpose

Statement Of Purpose

The enclosed Science curriculum is intended for third-grade students. Students will begin the curriculum by investigating and making predictions about the weather through careful observation of the clouds and wind. Students will also learn to differentiate between weather and climate and use models to reveal global climate patterns. Students will develop an understanding of how animals and their environments change through time. Students will explore how both animal life cycles and plant life cycles can look very different, but they all have commonalities. Students will discover how plants reproduce by exploring the process of pollination and fruiting. They will also investigate how plant traits are inherited from parent plants, and how favorable plant traits can be enhanced by humans via artificial selection. Students will explore the forces all around them, investigate the effects of balanced and unbalanced forces, the pushes and pulls of bridge structures, and the effects of friction on the motion of objects.

Table Of Contents

Unit 1 - Stormy Skies

Content Area: **Science**
Course(s):
Time Period: **1st Trimester**
Length: **4 weeks**
Status: **Published**

Summary of the Unit

In this unit, students investigate and make predictions about the weather through careful observation of the clouds and wind. Students also learn to differentiate between weather and climate and use models to reveal global climate patterns.

Enduring Understandings

- Science is the method of observation and investigation used to understand our world.
- Inquiry is the integration of process skills, the application of scientific content, and critical thinking to solve problems.
- Weather changes depending on the season.
- Scientists can record weather across different times and areas so that they can make predictions about what kind of weather might happen next.
- Earth's processes combine to make weather.
- Weather can be hazardous.
- Humans cannot eliminate natural hazards, but can take steps to reduce their impacts.

Essential Questions

- What factors affect daily weather?
- What factors affect an area's climate?
- How can data be used to determine the climate of various regions?
- Where do clouds come from?
- How can we predict when it is going to storm?
- Why are some places always hot?

- How can you keep a house from blowing away in a windstorm?

Summative Assessment and/or Summative Criteria

- Performance based assessments
    - Mystery Science Lesson Assessments
    - Mystery Science Unit Assessment
- Create a wind proof house as a solution to the hazard of high winds.
    - Materials:
        - Design a Windproof House worksheet - Mystery Science
        - Paper house model printout - Mystery Science
        - Wind Maker printout - Mystery Science
        - blank paper
        - scissors
        - dot stickers
        - paper clips
        - toothpicks
    - Directions:
        - Students will work in small groups and design a solution that prevents their house from blowing over in the wind.

Resources

Vocabulary:

- evaporation
- condensation
- water vapor
- cumulonimbus clouds

- cumulus clouds
- stratus clouds
- stratonimbus clouds
- climate
- region
- season
- temperature
- hot zone
- equator
- tropic lines
- tropical climate
- polar climate
- temperate climate
- mild climate
- desert climate
- tornadoes
- hurricane
- dust storm
- natural hazards
- engineers

Optional Related Texts:

- Flash, Changing Seasons / Bobbie Kalman & Kelley MacAulay
- What is Climate?/ Ellen Lawrence
- Weather / Seymour Simon
- On the Same Day in March: A Tour of the World's Weather / Marilyn Singer; illustrated by Frane Lessacoffrey

- Climates of the World: Identifying and comparing mean, median, and mode / Barbara Linde
- What's the Big Idea About Water (ReadWorks registration required)
- The Whys of Weather: Clouds (ReadWorks registration required)
- Water Takes 3 Forms (ReadWorks registration required)
- Weather: The Water Cycle (ReadWorks registration required)
- The Whys of Weather: Rain (ReadWorks registration required)
- Summer Vacation (ReadWorks registration required)
- The Big Storm (ReadWorks registration required)
- Animals Get Ready (ReadWorks registration required)
- Ilsa and the International Camp (ReadWorks registration required)
- An Introduction to Climates (ReadWorks registration required)
- How a House is Built (Epic registration required)
- Wind (Epic registration required)

Websites:

- Mystery Science - Stormy Skies unit
- Brain Pop
    - https://www.brainpop.com/science/weather/thunderstorms/
    - https://www.brainpop.com/science/weather/hurricanes/
    - https://www.brainpop.com/science/weather/weather/
    - https://www.brainpop.com/science/earthsystem/naturaldisasters/
- Discovery Education
- True Flix (Extreme Nature) - https://sdm-tfx.digital.scholastic.com/cb/node-33054?authCtx=U.646723767
- True Flix (Extreme Science - Weather) https://sdm-tfx.digital.scholastic.com/cb/node-44473?authCtx=U.646723767
- https://www.science4us.com/demo/ - interactive science lessons
- Weather Wiz Kids

- Mr. DeMaio Youtube Channel - Science Videos
- Steve Spangler makes clouds
- Water vapor extension questions

Mystery Science Resources:

- Annual Supply Calculator
- Grade Three Planning Guide

Unit Plan

Topic/Selection Timeframe	General Objectives	Instructional Activities	Benchmarks/Assessments	Standards
Lesson 1: Water Cycle and Phases of Matter 5 days	* SWBAT examine clues about how clouds look and feel to discover what they're made of and how they form. *SWBAT add hot water to clear cups to observe evaporation firsthand. *SWBAT observe the condensation of the water vapor on the sides of the cup. *SWBAT use this model to understand	*Mystery Science - Weather/Climate (Stormy Skies Unit) Lesson 1 "Where do clouds come from? * Discuss video 1- How would clouds feel? *Discuss video 2 - How do you recognize if a cloud is lower? *Discuss video 3 - What do you think will happen if you trap some water gas and do not let it escape? * Gas Trap Experiment - Mystery Science	Disappearing Puddles Extension Activity Two cups extension activity Lesson 1 Assessment - Mystery Science Gas Trap Experiment lesson activity	3-ESS2-2-1

	how clouds are formed.	* Additional Reading linked through Mystery Science on ReadWorks. *Additional activities and discussion questions on Mystery Science.		
Lesson 2: Local Weather Patterns and Weather Predictions 5 days	*SWBAT predict when it's going to storm. *SWBAT observe clouds and their changes. *SWBAT identify clues to look for to know a storm is coming your way. *SWBAT Identify the different types of storm clouds.	*Mystery Science - Weather/Climate (Stormy Skies Unit) Lesson 2 "How Can we predict when it's going to storm? *Discuss video 1 and complete storm spotters guide. *Discuss video 2 and the types of storm clouds. Refer back to the spotters guide book. *Discuss video 3 - Students will use the guide they created to identify what kinds of clouds are in the sky and if they are storm clouds. *Additional Reading linked through Mystery Science on ReadWorks.	Spotters guide lesson activity More sights in the sky extension activity Weather watcher's journal extension activity Make a wind vane extension activity Clouds poem ELA extension Cloudman's Gallery ELA extension Lesson 2 Assessment- Mystery Science	3 -ESS2-1

		*Additional activities and discussion questions on Mystery Science.		
Lesson 3: Seasonal Weather Patterns 5 days	*SWBAT explore seasonal weather in different regions. *SWBAT read the temperature on a Fahrenheit thermometer. *SWBAT make predictions about future weather in a region.	*Mystery Science - Weather/Climate (Stormy Skies Unit) "Where's the best place to build a snow fort?" *Discuss Video 1- How do you know it's winter where you live? What changes do you see? Discuss Video 2 - What temperature does the thermometer show here? Do you see any other clues that tell you if the temperature is hot or cold? Discuss Video 3 - How do you think this will change if the temperature stays above 32 degrees? Discuss Video 4 - Will the weather be good enough to build a snow fort where you live next year? Discuss Video 5 -	Thermometers Worksheet What's the Weather?	3-ESS2-1

		What kind of data should you collect to find where a good place would be to build a snow fort? Activity - What's the weather? Step by step directions in video to complete activity. *Wrap-Up Video Where was the best place to build a snow fort? * Additional Reading linked through Mystery Science on ReadWorks. *Additional activities and discussion questions on Mystery Science.		
Lesson 4: Climate, Geography, and Global Weather Patterns 5 days	*SWBAT define the concept of "climate" and explore the world's five major climates. *SWBAT color one part of a world map to determine the different climates of that region.	*Mystery Science - Weather/Climate (Stormy Skies Unit) Lesson 4 "Why are some places always hot?" *Discuss Video 1- Students will compare local climates to climates in videos. *Activity -	Americas Map & Climates lesson activity Asia & Australia Map & Climates lesson activity Europe & Africa Map & Climates Lesson 4 Assessment - Mystery Science Travel poster extension activity Desert climate extension activity	3-ESS2-1 3-ESS2-2

	*SWBAT combine maps and search for global climate patterns.	Climate Decoder Map - Step by step directions in video. *Discuss Video 2- Hot and cold climates *Discuss Video 3- Temperate Climate Zone and seasons *Discuss Wrap-up video - Mild and desert climates *Additional Reading linked through Mystery Science on ReadWorks. *Additional activities and discussion questions on Mystery Science.		

Lesson 5: Natural Hazards and Engineering 5 days	*SWBAT explore the effects of natural hazards, such as tornadoes, hurricanes, and dust storms. *SWBAT build paper house models. *SWBAT design multiple solutions that will make their houses sturdy enough to survive a wind storm, and compare the merits of their solutions.	*Mystery Science - Weather/Climate (Stormy Skies Unit) Lesson 5 "How can you keep a house from blowing away in a wind storm?" *Discuss video 1- Strong winds cause dust storm, tornado, hurricanes. *Discuss video 2 - Effects natural hazards *Activity - Design a Windproof house- Video with step by step directions. * Additional Reading linked through Mystery Science on ReadWorks. *Additional activities and discussion questions on Mystery Science.	Design a Windproof house - Mystery Science lesson activity Lesson 5 Assessment- Mystery Science What's in the Wind extension activity Unit Assessment - Mystery Science	3-ESS3-1 3-5-ETS1-1 3-5-ETS1-2 3-5-ETS1-3

SCI.3-ESS2-2	Obtain and combine information to describe climates in different regions of the world.
SCI.3-ESS2-1	Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.

SCI.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.
SCI.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.
SCI.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.
SCI.3-5.ETS1.A	Defining and Delimiting Engineering Problems

Suggested Modifications for Special Education, ELL and Gifted Students

*Consistent with individual plans, when appropriate.

English Language Learners- Provide picture cards with relevant vocabulary, hand movements to reinforce vocabulary words, study guides provided with pictorial representations, examples provided for higher level thinking skills such as Venn diagrams and predicting activities, grouped with advanced students to reinforce skills, reduce amount of vocabulary words used, check for understanding often, repeat and clarify directions.

Special Education- Provide vocabulary cards with visual representations, hand movements to reinforce vocabulary words, study guides provided with pictorial representations, examples provided for higher level thinking skills such as Venn diagrams and predicting activities, grouped with advanced students to reinforce skills.

Gifted Students- Choose a City, State, Country. Make copies of the weather page from a newspaper or online weather source. Have students track the temperature and precipitation for their location for a week. Present data in a chart and/or oral presentations.

Keep a weather journal; find someone in another location (or use online source) to compare your local weather to the weather in another location.

Suggested Technological Innovations/Use

- 8.1.8. E.1: Effective use of digital tools assists in gathering and managing information.
- 8.2.8. F.2: Technology is created through the application and appropriate use of technological resources.
- 8.2.8. D.1: Information literacy skills, research, data analysis and prediction are the basis for the effective design of technology systems.
- Peer reviews are to be commented on mini papers through Google Documents.
- 8.2.8. D.1: Information literacy skills, research, data analysis and prediction are the basis for the effective design of technology systems.

Cross Curricular/21st Century Connections

9.1 21st Century Life and Career Skills: All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.

- 9.1.8.A.1: Develop strategies to reinforce positive attitudes and productive behaviors that impact critical thinking and problem-solving skills.
- 9.1.8.B.2: Assess data gathered to solve a problem for which there are varying perspectives (e.g., cross-cultural, gender-specific, generational), and determine how the data can best be used to design multiple solutions.
- 9.1.8.C.2: Demonstrate the use of compromise, consensus, and community building strategies for carrying out different tasks, assignments, and projects.
- 9.1.8.D3: Use effective communication skills in face-to-face and online interactions with peers and adults from home and from diverse cultures.
- 9.1.8.F.1: Demonstrate how productivity and accountability contribute to realizing individual or group work goals within or outside the classroom.

Unit 2 - Animals Through Time

Content Area: **Science**
Course(s):
Time Period: **2nd Trimester**
Length: **6 weeks**
Status: **Published**

Summary of the Unit

In this unit, students develop an understanding of how animals and their environments change through time. Fossils provide a window into the animals and habitats of the past. Analyzing the traits of animals provides evidence for how those traits vary, how they are inherited, and how they have changed over time. Students also examine how the environment can affect inherited traits and determine which animals will survive in a particular environment.

Enduring Understandings

- Each living thing has a certain structure that allows it to function in unique ways within its own habitat.
- Living things are all interdependent on one another so it is important for us to take care of each other and our habitat.
- Science is the method of observation and investigation used to understand our world.
- Inquiry is the integration of process skills, the application of scientific content, and critical thinking to solve problems.
- The environment is a complex assemblage of interacting and evolving chemical, physical, and biological processes.

Essential Questions

- Where can you find whales in a desert?
- How do we know what dinosaurs looked like?
- Can you outrun a dinosaur?
- What kinds of animals might there be in the future?
- Can selection happen without people?
- Why do dogs wag their tails?
- How long can people (and animals) live in outer space?

Summative Assessment and/or Summative Criteria

- Performance based assessments
    - Mystery Science Lesson Assessments
    - Mystery Science Unit Assessment

Resources

Vocabulary:

- herbivore
- omnivore
- carnivore
- quarry
- fossils
- arrowhead
- traits
- sauropod family
- extinct
- skulls
- breeding
- selection
- generation
- auroch
- oxen
- social behavior

- colony

Optional Related Text:

- Inheritance of Traits: Why is My Dog Bigger than Yours? - Jen Green
- Grandfather's Nose: Why We All Look Alike and Different - Dorothy Hinshaw Patent
- Whose Baby is This? - Wayne Lynch
- A Whale of a Find
- Biggest Dino Ever article
- Plant Eating Dinosaurs Had Lots of Spare Teeth Article (requires Newsela registration)
- First Impressions article
- Some artic dinos lived in herds article
- Friendly Foxes article
- The Scientists of Lizard Island
- Ants to the Rescue (requires Newsela registration)
- What do astronauts eat in space article (requires Newsela registration)
- Peggy Whitson - first woman commander on International Space Station (requires Newsela registration)
- Does space travel change your body article (requires Newsela registration)
- Astronaut Scott Kelly returned to Earth (requires Newsela registration)

Websites:

- Mystery Science - Animals Through Time Unit
- Brain Pop
    - https://www.brainpop.com/science/diversityoflife/fossils/
    - https://www.brainpop.com/science/ourfragileenvironment/humansandtheenvironment/
    - https://www.brainpop.com/science/diversityoflife/dinosaurs/
    - https://www.brainpop.com/science/ourfragileenvironment/extinction/

    - https://www.brainpop.com/health/bodysystems/zikavirus/
    - https://www.brainpop.com/health/diseasesinjuriesandconditions/westnilevirus/
- True Flix (Animal Kingdom) - https://sdm-tfx.digital.scholastic.com/cb/node-38595?authCtx=U.646723767
- True Flix (Earth Science) - https://sdm-tfx.digital.scholastic.com/cb/node-34642?authCtx=U.646723767
- Discovery Education
- https://www.science4us.com/demo/ - interactive science lessons
- Paleontologist at Work
- Fossil Hunting with Mark Rentz
- How to Find a Dinosaur?
- How Dinosaurs Behaved
- Excerpt from Nature
- Crows mobbing a bald eagle
- Starlings escape a peregrine hunt
- Bugs, bites & blood
- Mosquito control biologist, Shelly Redovan
- Astronaut Mark Vande Hei

Astrophysicist Neil deGrasse Tyson explains how long you could last unprotected on another world

Mystery Science Resources:

- Annual Supply Calculator
- Grade Three Planning Guide

Unit Plan

Topic/Selection Timeframe	General Objectives	Instructional Activities	Benchmarks/Assessments	Standards

Lesson 1: Habitats, Fossils, and Environments Over Time 4 days	SWBAT explore the idea that the rock under our feet sometimes contains fossils and investigate how these fossils reveal changes in habitat through time SWBAT identify traits of fossils to determine what the habitat looked like when these organisms were alive	Mystery Science (Animals Through Time) Lesson 1 - Habitats, Fossils, and Environments Over Time *Discuss Video 1 - What do you think this is? *Discuss Video 2 - What other fossils can be found in this quarry? *Discuss Video 3 - Why would there be fossils of sharks and other ocean animals in the middle of the cornfields of Illinois? What clues could this give about what Illinois looked like over time? *Activity - Fossil Dig *Discuss Wrap-Up Video 1 - Could other places in the world have changed habitats like Illinois did? *Discuss Wrap-Up Video 2 - If you dug down in the ground where you live, what fossils creatures might you find? * Additional Reading linked	Fossil Dig lesson Activity Fossil Dig lesson Questions Mystery Fossils lesson activity How fossils form extension activities Lesson 1 Assessment - Mystery Science	3-LS4-1

		through Mystery Science on Readworks. *Additional activities and discussion questions on Mystery Science.		
Lesson 2: Fossil Evidence & Classification 4 Days	SWBAT learn how we infer what the outside of an animal looked like by using clues about their skeleton. SWBAT examine photos of skulls of both familiar animals and dinosaurs to figure out what each animal eats.	Mystery Science (Animals Through Time) Lesson 2 - Fossil Evidence & Classification *Discuss Video 1 - When scientists look at the bones of a dinosaur, how do they determine what these animals would have looked like on the outside? *Discuss Video 2 - Are the skulls more like lizard skulls or are they more like mammal skulls? *Discuss Video 3 - What part of the dinosaur body did a particular fossil come from? *What do these animals eat? - activity * Additional Reading linked through Mystery Science on ReadWorks. *Additional	What do these animals eat? Lesson Activity Fossilized Fashion extension activity Lesson 2 Assessment - Mystery Science	3-LS4-1

		activities and discussion questions on Mystery Science.		
Lesson 3: Fossil Evidence, Trace Fossils, and Animal Behavior 4 days	SWBAT learn about how fossil dinosaur tracks reveal how quickly a dinosaur was running. SWBAT figure out if they could have won a race with a dinosaur that was just their size. SWBAT compare the length of their running steps with the dinosaur's steps.	Mystery Science (Animals Through Time) Lesson 3 - Fossil Evidence, Trace Fossils, and Animal Behavior *Discuss Video 1 - What can you figure out about an animal just by looking at their footprints? *Discuss Video 2 - What can you tell about how fast an animal was moving based on how far apart their footprints are? *Discuss Video 3- Can you outrun a dinosaur? *Activity - Run For Your Life! * Additional Reading linked through Mystery Science on ReadWorks. *Additional activities and discussion questions on Mystery Science.	Dinosaur Footprints lesson activity Run For Your Life! Lesson Activity Be a Sleuth: How Dinosaurs Behaved extension activity Discussion Questions Lesson 3 Assessment - Mystery Science	3-LS4-1
Lesson 4: Trait Variation, Inheritance, and Artificial Selection	SWBAT learn how people create new breeds of animals by	Mystery Science (Animals Through Time) Lesson 4 - Trait Variation, Inheritance, and	Designer Dogs - Lesson Activity Spot the Differences extension activity	3-LS3-1, 3-LS4-2

4 days	mating and selecting individuals with desirable traits. SWBAT study the physical traits of the animals and look for the offspring that shares those traits.	Artificial Selection *Discuss Video 1- Can human beings invent or create animals? How would we change how animals look by breeding them together? *Discuss Video 2 - How do you think we created big dogs like the Great Dane? *Discuss Video 3 - Can you brainstorm other animals that may have been part of selection? *Discuss Video 4 - What is an animal or trait you would like to see in the future? *Activity - Designer Dogs *Additional Reading linked through Mystery Science on ReadWorks. *Additional activities and discussion questions on Mystery Science.	Lesson 4 Assessment - Mystery Science	
Lesson 5: Trait Variation, Natural Selection, and Survival	SWBAT learn about an example of how nature, not human	Mystery Science (Animals Through Time) Lesson 5 - Trait Variation, Natural Selection,	Adopt a Lizard lesson activity Baby Lizard lesson activity	3-LS4-3 3-LS3-1 3-LS2-1 3-LS4-2 3-LS4-4

4 days	beings, can slowly change the appearance of an animal using the process of selection. SWBAT simulate how natural selection affects a group of tree-climbing green lizards when their island is invaded by hungry brown lizards.	and Survival *Discuss Video 1 - Could selection happen without human beings being involved? What do you think happened to the green anoles? *Discuss Video 2 - What makes some green anoles better climbers than others? *Activity - Lizard Island 2 videos *Wrap-up Video - Can you think of any other natural selections with other animals? * Additional Reading linked through Mystery Science on ReadWorks. *Additional activities and discussion questions on Mystery Science.	How Many Lizards? lesson activity Lesson 5 Assessment - Mystery Science Save the green anole extension activity Candy dish selection - extension activity Natural selection simulation extension activity	
Lesson 6: Animal Groups and Survival 4 days	SWBAT discover why dog expressions, like tail wagging, are so useful when living in a pack. SWBAT	Mystery Science (Animals Through Time) Lesson 6 - Animal Groups and Survival *Discuss Video 1 - How do some animals communicate? Why do some	Field Journal Lesson Activity Dancing Like a Bee extension activity Bees waggle dance video Lesson 6 Assessment - Mystery Science	3-LS2-1

	simulate observing animals in their natural habitats. SWBAT construct an explanation of how living in groups helps these animals survive.	animals communicate and others do not? *Discuss Video 2 - What other kinds of animals do you know of which live in groups and have social behavior? *Activity - Field Journal *Wrap-up Video - How does living in a group help animals survive? * Additional Reading linked through Mystery Science on ReadWorks. *Additional activities and discussion questions on Mystery Science.		
Lesson 7: Traits and Environmental Variations 4 days	SWBAT examine how physical traits can be influenced by the environment. SWBAT analyze how a NASA astronaut's traits changed during his "year in space". SWBAT measure some	Mystery Science (Animals Through Time) Lesson 7 - Traits and Environmental Variations *Discuss Video 1 - What things do you know about outer space that make it so dangerous? *Discuss Video 2 - What dangers do you think there might be living	Traits in Space lesson activity Touchdown extension activity Lesson 7 Assessment - Mystery Science Unit Assessment - Mystery Science	3-LS3-2

	of their physical traits (arm strength, height, and balance) and predict how their own traits might change after living in space.	inside a spacecraft? *Discuss Video 3 - What traits do you think might change from being in space? *Activity - Traits in Space- Introduction video *Wrap-Up Video - If we start sending people to space for a long period of time, what kinds of things could we do to make sure that our bones and muscles stay strong? *Mystery Science Unit Assessment * Additional Reading linked through Mystery Science on ReadWorks. *Additional activities and discussion questions on Mystery Science.		

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

SCI.3-LS3-2	Use evidence to support the explanation that traits can be influenced by the environment.
SCI.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.
SCI.3-LS4-1	Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.
SCI.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.
SCI.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.

Suggested Modifications for Special Education, ELL and Gifted Students

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English Language Learners- Provide picture cards with relevant vocabulary, hand movements to reinforce vocabulary words, study guides provided with pictorial representations, examples provided for higher level thinking skills such as Venn diagrams and predicting activities, grouped with advanced students to reinforce skills, reduce amount of vocabulary words used, check for understanding often, repeat and clarify directions.

Special Education- Provide vocabulary cards with visual representations, hand movements to reinforce vocabulary words, study guides provided with pictorial representations, examples provided for higher level thinking skills such as Venn diagrams and predicting activities, grouped with advanced students to reinforce skills.

Gifted Students- Students will create a new breed of animal. Students will identify which two animals they would like to combine to make a new breed of animal. Students will write about the features of this new breed and draw a picture to describe the new breed they have created.

Suggested Technological Innovations/Use

- 8.1.8. E.1: Effective use of digital tools assists in gathering and managing information.
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- 9.1.8.C.2: Demonstrate the use of compromise, consensus, and community building strategies for carrying out different tasks, assignments, and projects.
- 9.1.8.D3: Use effective communication skills in face-to-face and online interactions with peers and adults from home and from diverse cultures.
- 9.1.8.F.1: Demonstrate how productivity and accountability contribute to realizing individual or group work goals within or outside the classroom.

Unit 3 - Circle of Life

Content Area: **Science**
Course(s):
Time Period: **2nd Trimester**
Length: **4 weeks**
Status: **Published**

Summary of the Unit

In this unit, students develop an understanding of life cycles. Students explore how both animal life cycles and plant life cycles can look very different, but they all have in common birth, growth, reproduction, and death. Changes to one stage of the life cycle can affect all other stages.

Enduring Understandings

- Science is the method of observation and investigation used to understand our world.
- Inquiry is the integration of process skills, the application of scientific content, and critical thinking to solve problems.
- The environment is a complex assemblage of interacting and evolving chemical, physical, and biological processes.
- Changes organisms go through during their life form a pattern.

Essential Questions

- What is a life cycle?
- What changes do organisms go through during their life cycle?
- How is your life like an alligator's life?
- What is the best way to get rid of mosquitos?
- Why are there so many different kinds of flowers?
- How is a plant life cycle similar to an animal's life cycle? How is it different?

Summative Assessment and/or Summative Criteria

- Performance Based Assessment: Students might create a model of a plant/animal's life cycle or

habitat. This may take the form of a diorama, poster, or other type of constructed representation.

- Show students photos of a plant/animal at different intervals so they can observe and write about the specific changes.
- 4 stage life cycle template
- 5 stage life cycle template
- Frog life cycle spinner
- Frog life cycle cut and paste
- Life cycle of a frog - explain each stage
- Butterfly life cycle spinner
- Butterfly life cycle cut and paste
- Life cycle of a butterfly - explain each stage
- Plant life cycles cut and paste
- Mystery Science Lesson Assessments

Resources

Vocabulary:

- chrysalis
- metamorphosis
- timeline
- life cycle
- malaria
- tropics
- wrigglers
- larvae
- pupa

- cocoon
- constraints
- repellant
- saliva
- West Nile virus
- Zika virus
- yellow fever
- nectar
- pollen
- pollination

Websites:

- Monarch Butterfly Life cycles
- Frog Life Cycle
- Growing Caterpillar Mini Lesson
- Life Cycle Posters
- Mosquitoes in Royal Pond
- Mosquito Metamorphosis Project
- Mosquito Control Biologist
- The Mosquito Bite
- National Geographic Life Cycle of a Butterfly
- Plant and animal life cycle reading material
- Ladybug Life Cycle (live ladybugs)
- Ladybug Life Cycle (cartoon version)

Books:

- Plant Life Cycles
- The Amazing Life Cycle of Plants (read aloud)
- Animal Life Cycles
- What is a Life Cycle?
- How Do Animals Change?
- The Life Cycle of a Ladybug (read aloud)

Mystery Science Resources:

- Annual Supply Calculator
- Grade Three Planning Guide

Ladybug Resources:

- Ladybug lesson resource (includes article, stage name labels, comprehension questions, life cycle diagram, Venn Diagrams, word search)
- Ladybug observation journals (included under the "Resources", "Worksheets" tab).

Unit Plan

Topic/Selection Timeframe	General Objectives	Instructional Activities	Benchmarks/Assessments	Standards
Lesson 1: Animal Life Cycles 5 days	*SWBAT search for patterns of what all animals share (birth, growth, reproduction, death) across their unique and diverse life cycles.	Mystery Science - (Circle of Life) Lesson 1 - Animal Life Cycles - How is your life like an alligator? *Discuss Video 1 - What's your	Birthday Buddies Animal Cards Birthday Buddies Timeline	3-LS1-1

		favorite thing you can do now that you couldn't do as a baby? *Discuss Video 2 - Which birthday buddy do you think will change the most as they grow into an adult? *Discuss Video 3 - How could you draw a picture that shows how you've changed since you were born? *Activity - Birthday Buddies. Step by step instructions on video. *Discuss Video 4 - If all animals eventually die, will animals exist in the future? How do you know? *Discuss Wrap-up video - How could you add to your timeline to show what happens to your birthday buddies' babies after they are born?		

		* Additional Reading linked through Mystery Science on ReadWorks. *Additional activities and discussion questions on Mystery Science.		
Lesson 2: Environmental Change and Engineering 5 days	*SWBAT recognize the cause and effect relationship between a change in the environment and the survival of organisms that live there. *SWBAT recognize environments as a system made up of interdependent parts that function as a whole.	Mystery Science - (Circle of Life) Lesson 2 - Animal Life Cycles - What's the best way to get rid of mosquitoes? *Discuss Video 1 - How could such a small insect be so dangerous? *Discuss Video 2 - Why would there be more mosquitoes living in the tropics as compared to other places? Why are diseases carried by mosquitoes more common in the tropics? *Discuss Video 3 - Why do mosquitoes need water to live? How can people avoid being bitten by	Bug Off! Playground lesson activity Bug Off! Picnic Area lesson activity Bug Off! Backyard lesson activity Problem Solver's Sheet lesson activity mosquitoes in the royal pond extension video mosquito metamorphosis wheel extension activity mosquito life cycle Lesson 2 Assessment - Mystery Science	3-LS4-3 3-LS4-4 3-5ETS1-2

		mosquitoes? *Activity - Bug Off! Introduction video *Wrap-Up Video - What would life be like to never have to worry about getting itchy mosquito bites again? * Additional Reading linked through Mystery Science on ReadWorks. *Additional activities and discussion questions on Mystery Science.		
Lesson 3: Plant Life Cycles 5 days	*SWBAT discover the pattern that without bees in the environment plants can not reproduce and, therefore, there will be less flowers and fruits in future seasons.	Mystery Science - (Circle of Life) Lesson 3 - Animal Life Cycles - Why are there so many different kinds of flowers? *Discuss Video 1 - What happens to these two plants as time goes by? What's different about how they grow? What's the same?	Future Flower Rules Sheet My Tiny Garden Plant Cards & Card Station Score Sheet & Bee Card	3-LS1-1

		*Discuss Video 2 - Imagine you see these 3 restaurant signs for pizza. Which restaurant would you go to? Why? *Discuss Video 3 - Can you think of any reason why bees visiting flowers might be good for the plant? *Discuss Video 4 - How many ways can you think of to move pollen from one flower to another? *Discuss Video 5 - If you were planting a garden with different kinds of flowers, what would your garden need for those flowers to be pollinated? *Activity - Step by step video directions. *Discuss Video 6 - How could smelling like garbage help the Corpse Flower?		

		*Wrap-up Video - What other insects help plants?		
Lesson 4: Ladybug Life Cycle 2 days (plus time each day to observe ladybugs before releasing outdoors)	SWBAT learn how ladybugs begin as eggs and then pass through the stages of larva, pupa, and young ladybugs before becoming adult ladybugs. SWBAT learn what occurs during each stage and will also see what ladybugs look like during each stage of their life cycle.	Show students ladybug life cycle video(s) and/or listen to read aloud. Explain that life cycles are a series of changes that living things go through, beginning with birth. Using humans as an example, discuss how we change in appearance (infant, toddler, child, adolescent, adult) and also in behavior. Show students the ladybug life cycle diagram. Review the names of each stage in the life cycle. Have students read Ladybug Life Cycle article (comprehension questions optional). When the reading is complete, have them share what they learned about each stage in	Ladybug life cycle video (cartoon version) Ladybug life cycle video (live version) The Life Cycle of a Ladybug read aloud Ladybug lesson resources Ladybugs amazing bugs kit (Provided to teachers) Ladybug observation journal options included under the "Resources", "Worksheets" tab.	

		the life cycle, organizing their ideas into “activities” and “appearance” on chart paper. Provide students with ladybug life cycle diagram so they can label the stages. Provide early finishers with ladybug life cycle word search. Students will have the opportunity to observe each fascinating stage of ladybug metamorphosis before releasing outdoors using the ladybug amazing bugs kit. Students may keep track of their observations in a ladybug observation journal.		

SCI.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.
SCI.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.
SCI.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.
SCI.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.
SCI.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.

Suggested Modifications for Special Education, ELL and Gifted Students

*Consistent with individual plans, when appropriate.

English Language Learners- Provide picture cards with relevant vocabulary, hand movements to reinforce vocabulary words, study guides provided with pictorial representations, examples provided for higher level thinking skills such as Venn diagrams and predicting activities, grouped with advanced students to reinforce skills, reduce amount of vocabulary words used, check for understanding often, repeat and clarify directions.

Special Education- Provide vocabulary cards with visual representations, hand movements to reinforce vocabulary words, study guides provided with pictorial representations, examples provided for higher level thinking skills such as Venn diagrams and predicting activities, grouped with advanced students to reinforce skills.

Gifted Students- Students will develop a strategy to help pollinate plants without the help of bees and other insects. Students will describe how they think plants could be pollinated. They will write a description and draw a model of their pollination technique.

Suggested Technological Innovations/Use

- 8.1.8. E.1: Effective use of digital tools assists in gathering and managing information.
- 8.2.8. F.2: Technology is created through the application and appropriate use of technological resources.
- 8.2.8. D.1: Information literacy skills, research, data analysis and prediction are the basis for the effective design of technology systems.
- Peer reviews are to be commented on mini papers through Google Documents
- 8.2.8. D.1: Information literacy skills, research, data analysis and prediction are the basis for the effective design of technology systems.

Cross Curricular/21st Century Connections

9.1 21st Century Life and Career Skills: All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers

in diverse ethnic and organizational cultures.

- 9.1.8.A.1: Develop strategies to reinforce positive attitudes and productive behaviors that impact critical thinking and problem-solving skills.
- 9.1.8.B.2: Assess data gathered to solve a problem for which there are varying perspectives (e.g., cross-cultural, gender-specific, generational), and determine how the data can best be used to design multiple solutions.
- 9.1.8.C.2: Demonstrate the use of compromise, consensus, and community building strategies for carrying out different tasks, assignments, and projects.
- 9.1.8.D3: Use effective communication skills in face-to-face and online interactions with peers and adults from home and from diverse cultures.
- 9.1.8.F.1: Demonstrate how productivity and accountability contribute to realizing individual or group work goals within or outside the classroom.

Unit 4 - Power of Flowers

Content Area: **Science**
Course(s):
Time Period: **3rd Trimester**
Length: **4 weeks**
Status: **Published**

Summary of the Unit

In this unit, students discover how plants reproduce by exploring the process of pollination and fruiting. They also investigate how plant traits are inherited from parent plants, and how favorable plant traits can be enhanced by humans via artificial selection.

Enduring Understandings

- Science is the method of observation and investigation used to understand our world.
- Inquiry is the integration of process skills, the application of scientific content, and critical thinking to solve problems.
- The environment is a complex assemblage of interacting and evolving chemical, physical, and biological processes.
- Changes organisms go through during their life form a pattern.

Essential Questions

- What is a life cycle?
- What changes do organisms go through during their life cycle?
- How is a plant life cycle similar to an animal's life cycle? How are they different?
- Why do plants grow flowers?
- Why do plants give us fruit?
- Why are some apples red and some green?
- How could we make the biggest fruit in the world?

Summative Assessment and/or Summative Criteria

- Performance based assessments
    - Mystery Science Lesson Assessments
    - Mystery Science Unit Assessment

Resources

Vocabulary:

- pollination
- pollen
- pollinator
- pollen dusters
- nectar
- stigma
- seed pods
- traits
- ovary
- variety
- vegetable
- selection
- inherit
- fruit

Optional Related Texts:

The Tiny Seed by Eric Carle

Planting a Rainbow by Lois Ehlert

Seed to Plant National Geographic for Kids

Heredity:Pass it On! by Rebecca Hirsh

A Fruit is a Suitcase for Seeds by Jean Richards

Animal Pollinators by Jennifer Boothroyd

Flowers Go Bats article

Photos of bats pollinating flowers

Websites:

- Mystery Science - Power of Flowers Unit
- Brain Pop
    - https://www.brainpop.com/science/cellularlifeandgenetics/pollination/
    - https://www.brainpop.com/science/diversityoflife/honeybees/
    - https://www.brainpop.com/science/cellularlifeandgenetics/plantgrowth/
    - https://www.brainpop.com/science/cellularlifeandgenetics/naturalselection/
- True Flix (Plants and Ecosystems) - https://sdm-tfx.digital.scholastic.com/cb/node-33057?authCtx=U.646723767
- True Flix (Experiments with Plants) https://sdm-tfx.digital.scholastic.com/cb/node-33966?authCtx=U.646723767
- Discovery Education
- https://www.science4us.com/demo/ - interactive science lessons
- Plant Structures for Kids Video - Mr.DeMaio

Mystery Science Resources:

- Annual Supply Calculator
- Grade Three Planning Guide

Unit Plan

Unit Plan

Topic/Selection Timeframe	General Objectives	Instructional Activities	Benchmarks/Assessments	Standards

Lesson 1: Pollination and Plant Reproduction 6 days	SWBAT learn how and why flowers are pollinated. SWBAT make flower models out of paper and bee models out of pipe cleaners. SWBAT fly their bees from flower to flower and observe what happens to the flower's pollen during this process.	Mystery Science - (Power of Flowers) Lesson 1 - Pollination and Plant Reproduction - Why do plants grow flowers? *Discuss Video 1 - What are bees doing for plants and flowers? *Discuss Video 2 - What are the different parts of a plant needed for pollination? *Discuss Video 3 - What are the bees doing to help pollinate that self pollination is not doing? *Discuss Video 4 - How are the bees assisting in pollination? *Discuss Video 5 - Why do bees help plants?	Make a flower lesson activity More paper flowers extension activity Dissect a flower extension activity A bouquet of flower parts extension activity Garden observation extension activity Lesson 1 Assessment - Mystery Science	3-LS1-1

		Make a Flower activity - Mystery Science * Additional Reading linked through Mystery Science on ReadWorks. *Additional activities and discussion questions on Mystery Science.		
Lesson 2: Seed Dispersal and Plant Life Cycle 6 days	SWBAT identify why plants give us fruit. SWBAT determine that every fruit begins as a flower. SWBAT determine how animals assist with the process of pollination. SWBAT explain why vegetables that contain seeds are	Mystery Science - (Power of Flowers) Lesson 2- Seed Dispersal and Plant Life Cycle - Why do plants give us fruit? *Discuss Video 1 - Where are the seeds that the pear flowers should have made? *Discuss Video 2 - What part of the flower turned into the pear?	Science Fruit or Science Vegetable activity Requires - radish, tomato, cucumber, potato, celery Lesson 2 Assessment - Mystery Science	3-LS1-1

	also considered fruits.	*Discuss Video 3 - Why do some plants grow delicious fruit around their seeds? *Discuss Video 4 - How do animals help with pollination? *Discuss Video 5 - What's considered a fruit? Activity - Science fruit or vegetable - Mystery Science * Additional Reading linked through Mystery Science on ReadWorks. *Additional activities and discussion questions on Mystery Science.		
Lesson 3: Trait Variation, Inheritance, & Artificial Selection	SWBAT identify what has been done to apples over the	Mystery Science - (Power of Flowers) Lesson 3- Trait	Apple Taste Test Activity Requires - Granny Smith, Red Delicious, Golden Delicious, Honeycrisp	3-LS3-1

5 days	past few thousand years to make them bigger and different colors. SWBAT identify that plants have traits inherited from parents. SWBAT identify that variation of these traits exists in groups.	Variation, Inheritance, & Artificial Selection - Why are some apples red and some green? *Discuss Video 1 - How did we get apples to be so big and come in so many different flavors? *Discuss Video 2 - How do the trees grown from the seed of an apple differ? *Discuss Video 3 - How do you think you could grow an apple even sweeter? *Discuss Video 4 - Why are some apples red and some apples green? Activity - Apple Taste test *Additional	Lesson 3 Assessment - Mystery Science	

		Reading linked through Mystery Science on ReadWorks. *Additional activities and discussion questions on Mystery Science.		
Lesson 4: Trait Variation, Inheritance, & Artificial Selection 5 days	SWBAT continue exploring how human beings have modified plants based on our knowledge of how plants inherit their traits. SWBAT understand that selection can be used to improve the trait of any plant. SWBAT understand that plant growers have used selection to create different varieties of fruits and vegetables.	Mystery Science - (Power of Flowers) Lesson 3- Trait Variation, Inheritance, & Artificial Selection - How could you make the biggest fruit in the world? *Discuss Video 1 - How has the process of selection over time created new varieties of plants? *Discuss Video 2 - What is a trait you might change about your favorite fruit? *Discuss	Fruit Cards Odd One Out Lesson 4 Assessment - Mystery Science Mystery Science Unit Assessment	3-LS3-1

	SWBAT name different varieties of the same fruit.	Video 3 - Are there any plants in our lives which turn out to be the variety of the same thing? Activity - Odd One Out Wrap-Up Video - Which new variety of fruit would you make?		

SCI.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.
SCI.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.

Suggested Modifications for Special Education, ELL and Gifted Students

*Consistent with individual plans, when appropriate.

English Language Learners- Provide picture cards with relevant vocabulary, hand movements to reinforce vocabulary words, study guides provided with pictorial representations, examples provided for higher level thinking skills such as Venn diagrams and predicting activities, grouped with advanced students to reinforce skills, reduce amount of vocabulary words used, check for understanding often, repeat and clarify directions.

Special Education- Provide vocabulary cards with visual representations, hand movements to reinforce vocabulary words, study guides provided with pictorial representations, examples provided for higher level thinking skills such as Venn diagrams and predicting activities, grouped with advanced students to reinforce skills.

Gifted Students- Students will create a new fruit that they would like to grow. Students will identify which two fruits they would like to combine to make a new fruit. Students will write about the features of this new

fruit and draw a picture to describe the new fruit they have created.

Suggested Technological Innovations/Use

- 8.1.8. E.1: Effective use of digital tools assists in gathering and managing information.
- 8.2.8. F.2: Technology is created through the application and appropriate use of technological resources.
- 8.2.8. D.1: Information literacy skills, research, data analysis and prediction are the basis for the effective design of technology systems.
- Peer reviews are to be commented on mini papers through Google Documents
- 8.2.8. D.1: Information literacy skills, research, data analysis and prediction are the basis for the effective design of technology systems.

Cross Curricular/21st Century Connections

9.1 21st Century Life and Career Skills: All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.

- 9.1.8.A.1: Develop strategies to reinforce positive attitudes and productive behaviors that impact critical thinking and problem-solving skills.
- 9.1.8.B.2: Assess data gathered to solve a problem for which there are varying perspectives (e.g., cross-cultural, gender-specific, generational), and determine how the data can best be used to design multiple solutions.
- 9.1.8.C.2: Demonstrate the use of compromise, consensus, and community building strategies for carrying out different tasks, assignments, and projects.
- 9.1.8.D3: Use effective communication skills in face-to-face and online interactions with peers and adults from home and from diverse cultures.
- 9.1.8.F.1: Demonstrate how productivity and accountability contribute to realizing individual or group work goals within or outside the classroom.

Unit 5 - Invisible Forces

Content Area: **Science**
Course(s):
Time Period: **3rd Trimester**
Length: **4-5 weeks**
Status: **Published**

Summary of the Unit

In this unit, students explore the forces all around them. They investigate the effects of balanced and unbalanced forces, the pushes and pulls of bridge structures, and the effects of friction on the motion of objects. Students also explore the power of magnetic forces and investigate firsthand how these forces can be used to help us in our everyday lives.

Enduring Understandings

- Investigate unbalanced and balanced forces on the motion of an object.
- Discover that a pattern can be used to predict future motion.
- Determine cause and effect relationships of electric or magnetic interaction between two objects not in contact with each other.

Essential Questions

- How and why do objects move?
- How do forces affect our everyday lives?
- How could you win a tug-of-war against a bunch of adults?
- What makes a bridge so strong?
- How can you go faster down a slide?
- What can magnets do?
- How can you unlock a door using a magnet?

Summative Assessment and/or Summative Criteria

- Performance based assessments

- Mystery Science Lesson Assessments
- Mystery Science Unit Assessment

Resources

Resources
Vocabulary:

- push
- pull
- force
- rind
- engineer
- pillar bridge
- arch bridge
- suspension bridge
- truss bridge
- friction
- motion
- gravity
- friction force
- magnet
- magnetized
- attract
- repel
- cow magnet
- property

Optional Related Text:

- Forces and Motion by Lewis Parker
- Forces and Motion by Katie Dicker
- Forces and Motion by Lesley Evans Ogden
- Forces and Motion: A Question and Answer Book by Catherine A. Welch
- How Amusement Parks Work by Lisa Greathouse
- Motion by Darlene Lauw, Lim Cheng Puay
- Pull It, Push It by Buffy Silverman
- Magnet Power by Buffy Silverman
- Electricity and Magnetism by Dana Meachen Rau
- Investing Magnetism by Sally Walker
- What Makes a Magnet? by Franklyn M. Branley
- Fishing for Forces article
- Galloping Gertie bridge collapse article
- Scientists Solve a Sticky Problem article
- Hunting for Rocks from Outer Space article
- The Biggest Magnet in the World article
- Magnetism: First science article (requires Epic registration)
- Discovering Science: Playing with Magnets article (requires Epic registration)

Websites:

- Mystery Science: Invisible Forces Unit
- Brain Pop
    - https://www.brainpop.com/science/energy/forces/
    - https://www.brainpop.com/science/motionsforcesandtime/gravity/
    - https://www.brainpop.com/science/motionsforcesandtime/magnetism/

    - https://www.brainpop.com/technology/scienceandindustry/bridges/
- True Flix (Extreme Science - Bridges) https://sdm-tfx.digital.scholastic.com/cb/node-44473?authCtx=U.646723767
- True Flix (Physical Science) - https://sdm-tfx.digital.scholastic.com/cb/node-44545?authCtx=U.646723767
- True Flix (Experiments) https://sdm-tfx.digital.scholastic.com/cb/node-33966?authCtx=U.646723767
- Discovery Education
- https://www.science4us.com/demo/ - interactive science lessons
- Forces, Sports and Fitness
- Ducksters - Physics for Kids: Force
- Tug Of War Match
- Tacoma Narrows suspension bridge
- Why are these cars sliding sideways?
- Making magnetic silly putty
- Iron for Breakfast
- Strange and suprising ways magnets are used
- Chain reaction video

Mystery Science Resources:

- Annual Supply Calculator
- Grade Three Planning Guide

Unit Plan

Topic/Selection Timeframe	General Objectives	Instructional Activities	Benchmarks/Assessments	Standards

Lesson 1: Balanced and Unbalanced Forces 5 days	SWBAT see that by learning to think about pushes and pulls — forces — they can accomplish extraordinary things. SWBAT discuss the forces of nature involved in making objects jump.	Mystery Science (Invisible Forces) Lesson 1 - Balanced and Unbalanced Forces *Discuss Video 1 - Is there anything else you could do to win this tug of war game against the adults? *Discuss Video 2 - Is there some way to stop the adults from being able to push against the ground? *Discuss Video 3 - Brainstorm actions - and identify them as pushes or pulls. *Discuss Video 4 - Could you use rubber bands to make a watermelon burst?	High Hop Scorecard lesson activity Hopper - Teacher Tips lesson activity Launch Pad lesson activity Tug of War Extension Activity on Mystery Science Lesson 1 Assessment - Mystery Science	3-PS2-1

		*Discuss Video 5 - How could you make something leap with a rubber band? *Activity - Hopper Popper- Video Introduction * Additional Reading linked through Mystery Science on ReadWorks. *Additional activities and discussion questions on Mystery Science.		
Lesson 2: Balanced Forces and Engineering 5 days	SWB introduced to ideas about real life bridge design. SWBAT use their knowledge of forces to build a strong bridge that supports as many pennies as possible.	Mystery Science (Invisible Forces) Lesson 2 - Balanced Forces and Engineering *Discuss Video 1 - What could you do with a bridge like this? How could you keep it from sagging?	Bridge Challenge lesson activity Bridge Designer's Notebook lesson activity Building Bridges Teacher's Tips lesson activity Extension Activity: What it feels like to be a bridge Extension Activity: Gumdrops and toothpicks Paper bridges extension resources	3-PS2-1 3-5ETS1-1 3-5ETS1-2 3-5ETS1-3

		*Discuss Video 2 - What makes a bridge strong? *Discuss Video 3 - How can you use this knowledge of bridges to make a strong paper bridge? *Activity - Building Bridges - Introduction Video * Additional Reading linked through Mystery Science on ReadWorks. *Additional activities and discussion questions on Mystery Science.	Golden Gate Bridge extension resources Building big bridges extension resource Lesson 2 Assessment - Mystery Science	
Lesson 3: Friction and Pattern of Motion 4 days	SWBAT state facts about friction. SWBAT test which materials have the most friction and which	Mystery Science (Invisible Forces) Lesson 3 - Friction and Patterns of Motion *Discuss	Friction Investigation lesson activity Experiment with Friction - Sliding game extension activity Lesson 3 Assessment - Mystery Science	3-PS2-1 3-PS2-2

	materials have the least friction. SWBAT make a model of a slide using a stack of books and a piece of cardboard.	Video 1 - What could you change in order to go down your slide faster? *Discuss Video 2 - How do materials affect how fast you go down a slide? *Activity - Friction Investigation - Introduction Video 1 and 2 * Additional Reading linked through Mystery Science on ReadWorks. *Additional activities and discussion questions on Mystery Science.		
Lesson 4: Magnets and Forces 4 days	SWBAT explore the surprising properties of magnets. SWBAT experiment	Mystery Science (Invisible Forces) Lesson 4 - Magnets and Forces	Ideas for magnet experiments lesson activity Magnets are Weird lesson activity Iron for Breakfast	3-PS2-3 2-PS2-4

	with an invisible force that acts at a distance. SWBAT use ring magnets and common objects to discover the push and pull of magnets and how magnets attract certain types of metals.	*Activity - Explore Magnets - Introduction Video. What did you learn about magnets? *Discuss Video 1 - What is unique about magnets? Where do magnets come from? How were they discovered? *Discuss Wrap-up video - What useful inventions could be made using magnets? * Additional Reading linked through Mystery Science on ReadWorks. *Additional activities and discussion questions on Mystery Science.	extension video Lesson 4 Assessment - Mystery Science	
Lesson 5:	SWBAT	Mystery	Design a lock lesson	3-PS2-3

Magnets and Engineering 4 days	investigate magnetic attraction and repulsion. SWBAT apply their scientific ideas about magnets to create a useful product. SWBAT engage in the engineering design process to test and improve their ideas.	Science (Invisible Forces) Lesson 5 - Magnets and Engineering *Discuss Video 1 - What other properties do magnets have? How could those properties be useful? *Discuss Video 2 - What properties are being used in the magnetic train example? *Discuss Video 3 - Is this property across the distance good for anything? Could it be useful? *Activity - Secret Room Lock - Introduction Video - Follow step by step video. *Wrap-up	activity Lesson 5 Assessment - Mystery Science 8 Fun Projects to do with magnets extension activities The Magnet Maze extension activity Unit Assessment - Mystery Science	3-PS2-4 3-5ETS1-1 3-5ETS1-2 3-5ETS1-3

		Video - What other problems could you solve using magnets? *Unit Assessment- Mystery Science * Additional Reading linked through Mystery Science on ReadWorks. *Additional activities and discussion questions on Mystery Science.		

SCI.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.
SCI.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.
SCI.3-PS2-4	Define a simple design problem that can be solved by applying scientific ideas about magnets.
SCI.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.
SCI.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.
SCI.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.
SCI.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.

Suggested Modifications for Special Education, ELL and Gifted Students

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English Language Learners- Provide picture cards with relevant vocabulary, hand movements to reinforce vocabulary words, study guides provided with pictorial representations, examples provided for higher level thinking skills such as Venn diagrams and predicting activities, grouped with advanced students to reinforce skills, reduce amount of vocabulary words used, check for understanding often, repeat and clarify directions.

Special Education- Provide vocabulary cards with visual representations, hand movements to reinforce vocabulary words, study guides provided with pictorial representations, examples provided for higher-level thinking skills such as Venn diagrams and predicting activities, grouped with advanced students to reinforce skills.

Gifted Students- Students will work to create a swing that swings as a result of a magnet. Magnetic Swing Project

Suggested Technological Innovations/Use

- 8.1.8. E.1: Effective use of digital tools assists in gathering and managing information.
- 8.2.8. F.2: Technology is created through the application and appropriate use of technological resources.
- 8.2.8. D.1: Information literacy skills, research, data analysis and prediction are the basis for the effective design of technology systems.
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Cross Curricular/21st Century Connections

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- 9.1.8.C.2: Demonstrate the use of compromise, consensus, and community building strategies for

carrying out different tasks, assignments, and projects.

- 9.1.8.D3: Use effective communication skills in face-to-face and online interactions with peers and adults from home and from diverse cultures.
- 9.1.8.F.1: Demonstrate how productivity and accountability contribute to realizing individual or group work goals within or outside the classroom.