Unit Summary

In this unit, students will demonstrate their learning about forces, magnets, and electricity. The students will be involved with learning and experimenting with forces that are balanced and unbalanced. Also, the students will demonstrate their understanding of objects in motion and changes in the objects' motion. Students will learn about the "cause and effect" relationship of force, along with the relationship of magnets and electricity. The students will learn about static electricity and magnets. The students will demonstrate their learning through experiments with magnets.

Title of Unit	**Subject Area**
3rd Grade Physical Science	3rd Grade Science

NEXT GENERATION SCIENCE STANDARDS AND CCSS (These standards will be assessed at the completion of this unit)

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.] [*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 m
interactions between two objects not in contact with each other. [Clarifica
Statement: Examples of an electric force could include the force on hair f
electrically charged balloon and the electrical forces between a charged rc
pieces of paper; examples of a magnetic force could include the force bet
permanent magnets, the force between an electromagnet and steel papercl
force exerted by one magnet versus the force exerted by two magnets. Ex
cause and effect relationships could include how the distance between obj
strength of the force and how the orientation of magnets affects the direct
magnetic force.] [*Assessment Boundary: Assessment is limited to forces p
objects that can be manipulated by students, and electrical interactions a
static electricity.*]

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

ELA/Literacy 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-PS2-1)

- ELA/Literacy W.3.7 Conduct short research projects that build knowledge about a topic. (3-PS2-1),(3-PS2-2)
- ELA/Literacy 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)
- Mathematics 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)
- Mathematics MP.2 Reason abstractly and quantitatively. (3-PS2-1)
- Mathematics MP.5 Use appropriate tools strategically. (3-PS2-1)

I Can Statements

I can identify and describe balanced and unbalanced forces.

I can explain balanced and unbalanced forces.

I can demonstrate balanced and unbalanced force.

I can observe and predict the patterns of motion.

I can explain gravity.

I can explain friction.

I can predict motion.

I can investigate force and gravity in experiments.

I can describe magnets.

I can explain cause and effect.

I can explain the "cause and effect" of magnets.

I can explain static electricity.

I can determine the "cause and effect" of magnetic interactions.

I can explain temporary magnets.

I can create an electromagnet.

Essential Questions

- How can you predict the motion of an object?
- How can you prove that an object is in motion?
- How do equal and unequal forces on an object affect the object?
- Why do changes in motion occur?

- How can magnets be used to create motion of an object?
- How can magnets be used to solve a problem?
- Why does static electricity make objects move?

Enduring Understanding

- Motion and changes in motion (speed or direction) occur when an object is acted on by unbalanced forces. When there are balanced forces, there is no motion or no change in motion.
- Patterns of an object's motion can be observed and measured. These patterns help predict future motion.

- Electric and magnetic forces do not do not require objects to be in contact with one another.
- The proximity and position of electric and magnetic forces can affect motion.

Vocabulary

Push
Balanced
Unbalanced
Motion
Force
Gravity
Friction
Cause and effect
Direction
Attraction
Repulsion
Pull
Pattern
Static electricity
Magnet
Magnetic
Electric force
Static electricity
Magnetic force
Poles
Electromagnets

Assessments

Formative

--questioning (blooms)
--accountable talk
--Think, Pair, Share
--Thumbs up/down
-- Index Card/Post it notes
-- Journal/notebook reflections

Summative

--Quizzes
-- Test (attached hard copy)
--Project (Magnet Problem- attached hard copy)

Notes	Resources
	*Third Grade Common Core and Next Generation Science NGSS Lessons: Full Year by Engaging Lessons by Frank (teacherspayteachers.com) *Bill Nye The Science Guy videos * Edhelper.com *Brainpop.com *United Streaming *curriculumcrafter.org *youtube videos *readworks.org *Science Companion *The Science Penguin Inc. (teacherspayteachers.com)

3rd Grade Science Weather and Climate Core Units

Course Title: Science **Unit Title: Weather and Climate** **Length of Unit: 6 weeks**

Grade Level: Third Grade

Standards & Benchmarks	Essential Questions, Learning Targets & "I can" Statements	Key Vocabulary	Suggested Assessment	Possible Resources
3-ESS2-1: Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. 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 a weather-related hazard. 3-ESS2-a. Organize simple weather data sets to record local weather data and identify day-to-day variations, as well as long-term patterns of weather. [*Assessment Boundary:*	*I can explain the difference between weather and climate. *I can define precipitation, temperature, and humidity. *I can demonstrate the water cycle. *I can graph the average weather temperatures, precipitation, and wind direction. *I can identify and explain weather instruments. *I can make a rain gauge. *I can record and observe data from the rain gauge. *I can name symbols/keys from a weather map. *I can describe what a forecast is. *I can explain high and low pressure. *I can construct	Weather Climate Forecast Meteorologist Temperature Precipitation Air pressure Hazards Tornado Blizzard Flood (flash) Drought Lightning Thurnderstorms Hurricane Avalanche Lightning rod Humidity Atmosphere Wind speed Wind Direction Front- cold, warm, stationary Climate zone Temperate Polar Tropical Arid Mediterranean Mountainous Advisory Watch Warning Thermometer Wind vane Rain gauge Anemometer Barometer Wind mill Solar energy Hydropower	**Formative** Think/Pair/Share Index card/post-it note Questioning (Bloom's) Journal Writing **Common Formatives** Water Cycle Experiment Sheet Water Cycle Quiz Weather Instrument Quiz Rain Gauge It's A Front (reading) 3 Climate Zone (comparison) Vocabulary Quiz **Summative** Hard copy attached	Wonderopolis.org United Streaming Edhelper Youtube Brainpop Brainpop JR Curriculum Crafter Science A-Z (Atomsphere and Climate by Karen de Seve) ReadWorks.org TeacherspayTeachers -The Science Penguin -Brenda Martin -Trina R Dralus -WEATHER & CLIMATE: NGSS for 3rd Grade By Technology Teacher McGraw-Hills Series Bill Nye The Science Guy Climate video Slideshare (Websites on pages 3- 4)

Weather data is limited to temperature, precipitation, and wind direction.] 3-ESS2-b. Display simple data sets in tables and graphs to describe typical weather conditions expected during a particular season and identify variations over years. [Clarification Statement: Data at this grade level could include average temperature or precipitation.] [*Assessment Boundary: Climate change not to be assessed.*] 3-ESS2-c. Obtain and communicate information about the similarities and differences between weather and climate. 3-ESS3-a. Use evidence to evaluate and	a weather map. *I can explain climate zones. ***** I can describe severe weather. * I can explain/demonstrate what humans have designed to reduce impact of the storms.			

refine design solutions that reduce the environmental and/or societal impacts of a weather-related hazard.* [Clarification Statement: Examples of solutions to weather-related hazards are physical models of barriers to prevent flooding.] 3-ESS3-b. Obtain and communicate information about new and/or improved technologies, developed as a result of increased scientific knowledge of weather or related hazards, which have changed the way people live or interact with one another.* [Clarification Statement: For example, the discovery that lightning is electricity				

led to the development of the lightning rod.]				

Websites:

Brainteaser Tornado
http://kids.nationalgeographic.com/kids/games/geographygames/brainteasertornado/

Edheads http://www.edheads.org/activities/weather/index.shtml

Natural Disasters
http://environment.nationalgeographic.com/environment/natural-disasters/forces-of-nature.html?section=t

Scijinks http://scijinks.jpl.nasa.gov/weather-menu

Storm Chasers http://www.discovery.com/tv-shows/storm-chasers/games-and-more/tornado-chase-game.htm

Weather Game http://www.cotf.edu/ete/modules/k4/swf/Wonline1.swf

Weather Dog http://www.funbrain.com/weather/index.html

Wildest Weather- build probes
http://kids.nationalgeographic.com/kids/games/interactiveadventures/wildest-weather/

More Weather Sites https://sites.google.com/a/valdezcityschools.org/vcsd-splash-page/home/themes/weather

Unit 3 Summary: In this unit, students will demonstrate their learning about life science. The Life Science is broken down into fossils, life cycles, inherited traits, adaptations and survival of plants and animals. Students will explain the "cause and effect" relationship of plants and animals for life cycles, traits, adaptations, and survival. The students will also explain using evidence to support their thinking about these concepts.	
Title of Unit: Life Science	**Subject Area:** 3rd Grade Science

Next Generation Science Standards and CCSS:

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-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.*]

- ELA/Literacy 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-LS2-1), (3-LS4-3), (3-LS4-4)
- ELA/Literacy SL.3.4 Report on a topic or text, tell a story, or recount an experience with appropriate facts

- ELA/Literacy 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), (3-LS4-3), (3-LS4-4)
- ELA/Literacy RI.3.2 Determine the main idea of a text; recount the key details and explain how they support the main idea. (3-LS4-3), (3-LS4-4)
- ELA/Literacy 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-LS2-1), (3-LS4-3), (3-LS4-4)
- ELA/Literacy 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-LS4-3), (3-LS4-4)
- ELA/Literacy W.3.1 Write opinion pieces on topics or texts, supporting a point of view with reasons. (3-LS2-1), (3-LS3-3), (3-LS4-4)
- ELA/Literacy W.3.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (3-LS3-3), (3-LS3-4)
- Mathematics 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-LS4-3)
- Mathematics 3.NBT Number and Operations in Base Ten. (3-LS2-1)
- Mathematics MP.2 Reason abstractly and quantitatively. (3-LS4-3), (3-LS4-4)
- Mathematics MP.4 Model with mathematics. (3-LS2-1), (3-LS4-3), (3-LS4-4)

I Can Statements

- I can explain life cycle.
- I can describe and illustrate the life cycle of a butterfly.
- I can describe and illustrate the life cycle of a frog.
- I can do research and present on a life cycle.
- I can draw conclusions about different life cycles.
- I can explain why animals form groups.
- I can describe traits that plants and animals inherited from their parents.
- I can identify traits inherited from parents.
- I can identify variations in traits in a group of organisms.
- I can identify environmental influences on traits.
- I can explain what a fossil is.
- I can identify and explain what adaptations are.
- I can explain how an animal survives in its habitat.
- I can hypothesize solutions to an environmental change/problem.

Essential Questions

- How did changing environments affect the plants and animals that lived there long ago?
- How were plants, animals, and environments long ago similar and different than they are today?
- What can we learn about the past through fossil evidence?
- What causes some plants and animals to become extinct?
- What patterns can be found in organisms' life cycles?

- How do these differences help them survive?
- Why do different members of the same species look different?

- What happens to organisms when their environment changes?
- Why are some animals in a particular environment better able to survive than others, while some don't survive at all?
- Why do some animals live together?

Enduring Understanding

- Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments.
- Some kinds of plants and animals that once lived on earth are no longer found anywhere.
- Plants and animals have unique and diverse life cycles.

- Characteristics of organisms are inherited from their parents or a result of interactions with the environment.
- Organisms vary because they have inherited different information or had different interactions with their environment.
- Sometime these differences provide advantages in surviving.

- An animal's survival depends on its ability to adapt to its environment (this can include forming groups).
- Environmental and/or population changes affect the organisms that live within that environment.

Academic Vocabulary

Organism
birth
Reproduction
Inherit
Habitat
Adaptations
Cause and effect
Offspring
Chrysalises
Amphibian
Bird
Fish
Seedling
Young plant
Environment
Marine fossil
Arctic
Relative age
Prey
Biome
Generation
Mating
life cycle
growth
death
traits
herd
solitude
camouflage
larva
metamorphosis
mammal
reptile
seed
sprout
mature plant (adult)
fossil
tropical fossil
extinct
predators
ecosystem
habitat
cousins/descendants

Assessments

Formative

--questioning (blooms)
--accountable talk
--Think, Pair, Share
--Thumbs up/down
-- Index Card/Post it notes
-- Journal/notebook reflections

Summative

--Quizzes
-- Test (attached hard copy)
-- Project (attached hard copy)

Lesson Sequence

Resources

*Third Grade Common Core and Next Generation Science NGSS Lessons: Full Year by Engaging Lessons by Frank (teacherspayteachers.com)
*Bill Nye The Science Guy videos
* Edhelper.com
*Brainpop.com
*United Streaming
*curriculumcrafter.org
*youtube videos
*readworks.org
*Science Companion
*The Science Penguin Inc. (teacherspayteachers.com)
*Magic School Bus Books and videos- Magic School Bus Butterfly and the Bog Beast and Magic School Bus All Dried Up
*Guest Speakers (Mr. Dan Walsh to discuss animal adaptations)

3rd Grade- Weather and Climate

Unit 1 Summary

In this unit, students will be learning about different aspects of the weather and climate around the Earth. The students will be able to explain the differences between weather and climate. Also, the students will be studying forecasts, severe weather, how humans try to stop the impact of severe weather, weather instruments, and climate zones.

Unit of Study

Unit Title
Length of Unit

Weather and Climate
6 weeks