Randolph Township School District
Randolph Elementary Schools

Science Curriculum
Grade 3
Third Grade

The art and science of asking questions is the source of all knowledge ~ Thomas Berger

Wisdom begins in Wonder ~ Socrates

Elementary Education
Katherine Thorn, Elementary Supervisor

Curriculum Committee 2017
Dana Dawson
Sarah Murray

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Randolph Township School District
Randolph Elementary Schools
Third Grade ~ Science

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Mission Statement

We commit to inspiring and empowering all students in Randolph schools to reach their full potential as unique, responsible and educated members of a global society.

Randolph Township School District
Affirmative Action Statement

Equality and Equity in Curriculum

The Randolph Township School district ensures that the district's curriculum and instruction are aligned to the state's standards. The curriculum provides equity in instruction, educational programs and provides all students the opportunity to interact positively with others regardless of race, creed, color, national origin, ancestry, age, marital status, affectional or sexual orientation, gender, religion, disability or socioeconomic status.

N.J.A.C. 6A:7-1.7(b): Section 504, Rehabilitation Act of 1973; N.J.S.A. 10:5; Title IX, Education Amendments of 1972

RANDOLPH TOWNSHIP BOARD OF EDUCATION
EDUCATIONAL GOALS
VALUES IN EDUCATION

The statements represent the beliefs and values regarding our educational system. Education is the key to self-actualization, which is realized through achievement and self-respect. We believe our entire system must not only represent these values, but also demonstrate them in all that we do as a school system.

We believe:

- The needs of the child come first
- Mutual respect and trust are the cornerstones of a learning community
- The learning community consists of students, educators, parents, administrators, educational support personnel, the community and Board of Education members
- A successful learning community communicates honestly and openly in a non-threatening environment
- Members of our learning community have different needs at different times. There is openness to the challenge of meeting those needs in professional and supportive ways
- Assessment of professionals (i.e., educators, administrators and educational support personnel) is a dynamic process that requires review and revision based on evolving research, practices and experiences
- Development of desired capabilities comes in stages and is achieved through hard work, reflection and ongoing growth

Randolph Township School District
Randolph Elementary Schools
Science ~ Grade 3

The third grade curriculum is designed to engage students by using hands-on and inquiry-based explorations as they examine engineering practices. Students will explore phenomena in order to formulate answers to questions and engineer solutions for everyday life. The curriculum is designed to be multidisciplinary; integrating NJSLS-S, language arts and math practices seamlessly throughout student-driven investigations. The students will participate in inquiry and problem based learning to answer questions such as: "*What is typical weather in different parts of the world and during different times of the year? How can the impact of weather-related hazards be reduced? How do organisms vary in their traits? How are plants, animals, and environments of the past similar or different from current plants, animals, and environments? What happens to organisms when their environment changes? How do equal and unequal forces on an object affect the object? How can magnets be used in various ways?*" Our students will experience the excitement of authentic learning activities throughout the course of the units and develop a strong understanding of the engineering process and scientific phenomena. Students will explore their passions while building a deeper understanding of cross-cutting concepts and increasing their preparedness for college, career, and life.

RANDOLPH TOWNSHIP SCHOOL DISTRICT
Curriculum Pacing Chart
Science ~ Grade 3

SUGGESTED TIME ALLOTMENT	UNIT NUMBER	CONTENT - UNIT OF STUDY
3 Weeks	I	Engineering
4 Weeks	II	Movement and Interaction of Objects
5 Weeks	III	Similarities and Differences in Organisms
3 Weeks	IV	Survival of Organisms
5 Weeks	V	Changes to Organisms' Environment

RANDOLPH TOWNSHIP SCHOOL DISTRICT
Science ~ Grade 3
UNIT I: Engineering

TRANSFER: Utilize the engineering process to systematically solve practical problems.

STANDARDS / GOALS:	**ENDURING UNDERSTANDINGS**	**ESSENTIAL QUESTIONS**
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 solutions to a problem based on how well they meet the criteria and constraints of the design 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. **ELA/Literacy:** W.3.2 W.3.2.B W.3.8 SL.3.4 RL.3.2 RI.3.1 RI.3.7	People's needs and wants change over time, as do their demands for new and improved technology. Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands.	● How do engineers design and solve a problem? ● How do engineers develop, plan, test and improve upon solution based on wants and needs?
	KNOWLEDGE	**SKILLS**
	Students will know: Possible solutions to problems reflecting a need or a want include specified criteria for success and constraints. Research on a problem should be carried out throughout the design process.	**Students will be able to:** Identify a simple design problem reflecting a need or a want. Develop specific criteria for success. Discover and review research on an identified problem. Synthesize research to develop a plan for a successful solution. Compare solutions to a problem based on criteria and constraints.

Math: MC.3.MD.A.2 MP.2 MP.4 MP.5 3.MD.A.2 3-5.OA	Success of a solution can be compared based on constraints and how well it meets specific criteria. Communicating with peers about proposed solutions is an important part of the design process. Tests are designed to identify successes and difficulties for enhanced designs. **KEY TERMS:** constraint, criteria, engineer, technology	Produce a solution(s) to an identified problem. Test and evaluate the success of a developed solution(s) to a problem. Collaborate to compare the value of possible solution(s) based on specified criteria and constraints. Discuss possible solutions to problems, the success and difficulties of elements of the design and potential for improvement. Reflect on the benefits of collaboration to work and improve upon design elements. Plan and carry out tests in which variables are controlled and difficulties are considered to improve a model or prototype. Collaborate to improve and identify solutions in which variables are controlled. Test variables are controlled to identify aspects of a model or prototype that can be improved to best solve a problem. Discuss and reflect upon different solutions to best solve the problem, given the criteria and constraints.

ASSESSMENT EVIDENCE: Students will show their learning by:

- Designing a solution to make an improvement on a real-life problem involving research. (ie: designing an irrigation system for keeping plants watered during a two-week school break)

KEY LEARNING EVENTS AND INSTRUCTION:

- Define a simple real-life problem
- Consider constraints and other criteria by brainstorming designs to a solve to a problem
- Plan and conduct investigations that test solutions
- Identify problems and improvements in order to increase benefits or decrease risks associated with a design or solution
- Develop an understanding of potential failure points or difficulties with a design
- Communicate with peers throughout the design process to evaluate for revisions
- Develop an understanding of how failures can lead to improvements in designs
- Compare design solutions to improve a design or future solutions
- Observe various objects and identify certain patterns of motion they make in real-life

RANDOLPH TOWNSHIP SCHOOL DISTRICT
Science ~ Grade 3
UNIT I: Engineering

SUGGESTED TIME ALLOTMENT	CONTENT-UNIT OF STUDY	SUPPLEMENTAL UNIT RESOURCES
3 Weeks	**UNIT I: Engineering**	**Suggested Resources** **Science Dimensions** Unit 1, Lesson 1 Unit 1, Lesson 2 Unit 1, Lesson 3 Performance Task **Safari Montage** **Brainpop** **Other Instructional Videos** **NASA/NASA for Kids: What is an Engineer?** **https://m.youtube.com/watch?v=wE-z_TJyziI** **What is an Engineer?: Crash Course 12.1** **https://m.youtube.com/watch?v=owHF9iLyxic** **Design Process: Crash Course 12.2** **https://m.youtube.com/watch?v=fxJWin195kU** **Interactive Practice** **How do you lift a Lion?** **https://www.youtube.com/watch?v=-nypq9QkuiE**

		Literary Resources *A Picture Book of Benjamin Franklin* by David A. Adler *Can You Fly High, Wright Brothers?* by Melvin Berger *Cool Science Jobs* by Carson ** Engineering the ABCs* by Patty O'Brien Novak *Finding the Titanic* by Robert Ballard *Five Brilliant Scientists* by Lynda Jones *Five Notable Inventors* by Wade Hudson **How Do You Lift a Lion?* by Robert Wells *How Things Work* by Claire Llewellyn **Iggy Peck, Architect* by Andrea Beaty **If I Built a Car* by Chris Van Dusen *Leonardo da Vinci* by Osborne *Louis Braille* by Davidson *The Real McCoy* by Towle **11 Experiments That Failed* by Jenny Offill and Nancy Carpenter *See Appendix A for summary

RANDOLPH TOWNSHIP SCHOOL DISTRICT
Science ~ Grade 3
UNIT II: Movement and Interaction of Objects

TRANSFER: Analyze force and its effect on an object.

STANDARDS / GOALS:	**ENDURING UNDERSTANDINGS**	**ESSENTIAL QUESTIONS**
3-PS2-1: Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object. **3-PS2-2:** Make observation and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion. **3-PS2-3:** Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other. **3-PS2-4:** Define a simple design problem that can be solved by applying scientific ideas about magnets. **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	Patterns of change can be used to make predictions.	● How do scientists predict future motions?
	Cause and effect relationships are routinely identified, tested, and used to explain change.	● How do scientists explain change?
	Scientific discoveries about the natural world can lead new and improved technologies, which are developed through the engineering process.	● Why do engineers observe the natural world?
	KNOWLEDGE	**SKILLS**
	Students will know: Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it.	**Students will be able to:** Design an investigation to provide evidence of the effects of force on the motion of objects. Implement an investigation to provide evidence of the effects of force on objects on the motion of objects. Make and support a claim about the relationship of force and motion. Observe and conduct investigations involving balanced and unbalanced forces.

improved. **ELA/Literacy:** RI.3.1 RI.3.3 W.3.2 W.3.7 W.3.8 SL.3.3 **Math:** MP.2 MP.5 3.MD.A.1 3.NF 3.NF.A.3 3.OA.D.8 3.MD.A.2	Objects in contact exert forces on each other. The pattern of an object's motion in various situations can be observed and measured. Electric and magnetic forces between a pair of objects do not require that the objects be in contact. The strength of the forces in each situation depend on the properties of the objects, their distances apart and, for forces between two magnets, on their orientation relative to each other. **KEY TERMS:** balanced, forces, electricity, force, gravity, magnet, net force, static electricity, unbalanced forces, frame of reference, motion, position, speed	Analyze the cause and effect relationship between force and motion. Make real-life observations about the motion of objects based on evidence of contact forces. Observe and measure an object's motion to provide evidence that a pattern can be used to predict future motion. Represent and analyze data in tables and graphs. Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other. Construct simple design problems that can be solved by applying scientific ideas about magnets.

ASSESSMENT EVIDENCE: Students will show their learning by:

- Designing and carrying out an investigation to demonstrate evidence of the effect force has on an object (ie: a maze, arcade game or sport)

KEY LEARNING EVENTS AND INSTRUCTION:

- Recognize forces as a push or a pull
- Demonstrate how strength and direction can be changed through real-world exploration
- Conduct a qualitative investigation of how a force's strength affects the speed and distance
- Plan and conduct an investigation to observe and measure contact forces
- Build an electromagnet and test its strength

- Conduct multiples tests to identify magnetism and static electricity as forces that can act on objects without touching them
- Determine whether an object is in motion
- Explain how the speed of an object is determined
- Describe how unbalanced forces affect the motion of an object
- Make observations and measurements to produce data to serve as the basis for an explanation of phenomena or to test a design solution by planning and carrying out observations
- Describe regular patterns of motion and how future motion can be predicted from them

RANDOLPH TOWNSHIP SCHOOL DISTRICT
Science ~ Grade 3
UNIT II: Movement and Interaction of Objects

SUGGESTED TIME ALLOTMENT	CONTENT-UNIT OF STUDY	SUPPLEMENTAL UNIT RESOURCES
4 **Weeks**	**UNIT II: Movement and Interaction of Objects**	**Suggested Resources** **Science Dimensions** Unit 2, Lesson 1 Unit 2, Lesson 2 Unit 2, Lesson 3 Unit 2, Performance Task Unit 3, Lesson 1 Unit 3, Lesson 2 **Safari Montage (Use video chapters as needed)** **Brainpop** Pushes and Pulls https://jr.brainpop.com/science/forces/pushesandpulls/ Magnets https://jr.brainpop.com/science/forces/magnets/ **Literary Resources** * *Fab Four Friends: The Boys Who Became the Beatles* by Susanna Reich *Experiments with Magnets* by Dale Byran *Experiments with Motion* by Susan Gray *Forces in Action* by Janine Scott *How People Learned to Fly* by Fran Hodgkins *Magnetism* by Mari Schuh

		Magic School Bus: Amazing Magnetism by Rebecca Carmi **The Beatles Wilma Unlimited: How Wilma Rudolph Became the World's Fastest Woman* by Kathleen Krull and David Díaz *What Makes a Magnet* by Franklyn Branley *See Appendix A for summary

RANDOLPH TOWNSHIP SCHOOL DISTRICT

Science ~ Grade 3

UNIT III: Similarities and Differences in Organisms

TRANSFER: Evaluate and analyze relationships among organisms.

STANDARDS / GOALS:	**ENDURING UNDERSTANDINGS**	**ESSENTIAL QUESTIONS**
3-LS1-1: Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. **3-LS3-1:** Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variations of these traits exist in a group of similar organisms. **3-LS3-2:** Use evidence to support the explanation that traits can be influenced by the environment **3-LS4-1:** Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived a long time ago. **3-ESS2-1:** Represent data in tables and graphical displays to describe typical weather conditions expected	Patterns of change can be used to make predictions.	● How are life cycles important in understanding patterns of change?
	Similarities and differences in patterns can be used to sort and classify natural phenomena.	● How do scientists sort and classify information?
	Cause and effect relationships are routinely identified and used to explain change.	● How does the environment affect organisms' traits and development?
	Observable phenomena exist from very short to very long time periods.	● What information does evidence provide about the types of organisms that existed and their environment?
	Science assumes consistent patterns in natural systems.	● How do scientists determine the kinds of organisms and the nature of their environment?
	KNOWLEDGE	**SKILLS**
	Students will know: Reproduction is essential to the continued existence of the unique and diverse life cycles of every type of organism.	**Students will be able to:** Explore various life cycles to identify patterns in various life cycles patterns. Develop models to illustrate that organisms have unique and diverse life cycles.

during a particular season. **ELA/Literacy:** RI.3.2 RI.3.3 RI.3.7 RI.3.8 RI.3.9 W.3.7 RF.3.3.C **Math:** 3.NBT 3.NF MP.2 MP.4 3.MD.B.4	Many characteristics' traits and functions of organisms are inherited from their parents. Different organisms vary in how they look and function because they have different inherited traits. Some characteristics result from individuals' interactions with the environment. The environment also affects the traits as an organism develops. Some kinds of plants and animals that once lived on Earth are no longer found anywhere. Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments. Scientists record patterns of the weather across different times and areas so that they can make predictions about rationale for extinction. **KEY TERMS:** life cycle, metamorphosis, organism, pups, trait, fossils, extinction	Identify similarities among organisms' common birth, growth, reproduction, and death. Classify organisms by trait. Analyze classified organisms to identify cause and effect relationships of parents' traits. Examine how inherited traits impact function of organisms. Investigate environmental factors that influence organisms and their traits. Use evidence to support the explanation that traits can be influenced by the environment. Support the explanation that traits can be influenced by the environment. Analyze fossils to explore organisms that lived long ago. Research organisms that no longer exist to identify environmental influence on extinction. Explore severe weather and environmental factors in current organisms that are at risk for extinction.

ASSESSMENT EVIDENCE: Students will show their learning by:

- Creating a model of a plant or animal life cycle
- Developing a plan for growing seeds by observing and researching patterns that affect an organism's traits and development (ex: effects of weather- hot and cold- on plan growth)

KEY LEARNING EVENTS AND INSTRUCTION:

- Identify and evaluate the common patterns in various lifecycles of plants
- Construct models of a plant life cycle
- Understand that a given plant's life cycle always happens in the same order
- Gather and analyze data to be used to support a claim that there is a patterns in how environmental conditions affect an organism's survival
- Develop ideal conditions in which to observe the life cycle stages of a mealworm (Mealworm Activity)
- Collect and interpret data based on parents of various plants and animals to find patterns and inherited traits
- Simulate patterns of inheritance from parents and interpret results of the simulation (Monster Traits)
- Gather data to investigate the effect of specific environmental factors such as heat and cold on the growth and development of plants

RANDOLPH TOWNSHIP SCHOOL DISTRICT
Grade 3 Curriculum
UNIT III: Similarities and Differences in Organisms

SUGGESTED TIME ALLOTMENT	CONTENT-UNIT OF STUDY	SUPPLEMENTAL UNIT RESOURCES
4 Weeks	**UNIT III: Similarities and Differences in Organisms**	**Suggested Resources** **Science Dimensions** Unit 4, Lessons 1 Unit 4, Lesson 2 Unit 4, Lesson 3 Unit 5, Lesson 1 Unit 4, Lesson 4 Unit 4 Project Unit 4, Performance Task **Safari Montage (Use video chapters as needed)** **Magnetic Force** **Chapter 1:** Magnetic Force (2 min 51 sec) **Gravity, Force and Work** **Chapter 1:** Gravity, Force and Work (9 min 5 sec **Brainpop** **Plant Life Cycles** **https://jr.brainpop.com/science/plants/plantlifecycle/** **3rd Grade Heredity: Learning about traits** https://www.youtube.com/watch?v=os8re_JmchI **Fossils** https://jr.brainpop.com/science/land/fossils/

		Literary Resources *Acorn to Oak Tree* by Camilla De la Bedoyere *A Baby Lobster Grows Up* by Katie Marsico *Baby Animals* by Melvin Berger *Butterflies* by Laura Marsh *The Emperor's Egg* by Martin Jenkins *In the Garden with Dr. Carver* by Susan Grigsby *Ladybugs* by Mia Posada *National Geographic Kids: Animal Superstars!* by Aline Alexander Newman *Nic Bishop: Butterflies and Moth* by Nic Bishop *Ocean* by Sean Callery *Rainforest* by Sean Callery *The Story of George Washington Carver* by Eva Moore

RANDOLPH TOWNSHIP SCHOOL DISTRICT
Science ~ Grade 3
UNIT IV: Survival of Organisms

TRANSFER: Investigate and evaluate the effect of climate on organism's survival.

STANDARDS / GOALS:	**ENDURING UNDERSTANDINGS**	**ESSENTIAL QUESTIONS**
3-LS2-1: Construct an argument that some animals form groups that help members survive. **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. **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. **3-5-ESS1-1:** Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season **ELA/Literacy:** RI.3.1 RI.3.3 SL.3.4 W.3.1 **Math:** MP.2 MP.4 3.MD.8.3 3.NBT	Cause and effect relationships are routinely identified and used to explain change in adaptations.	• How do plants and animals survive?
	Patterns of change can be used to make predictions about weather and climate and what may happen next in a time or area.	• How are patterns of water identified?
	KNOWLEDGE	**SKILLS**
	Students will know: Being part of a group serves many functions such as obtaining food, building a defense, and coping with changes. Sometimes the differences in characteristics between individuals of the same species provide advantages.	**Students will be able to:** Research social interactions and group behaviors. Explain various social structures of animal groups. Communicate a claim about animal social structure believed to be most effective. Justify claim using evidence. Explore different characteristics within the same species. Compare characteristic variations in animals to identify advantages.

		Construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.
	Survival of organisms is dependent upon many factors such as group interaction and inherited traits. .	Provide evidence to support claim(s) that some organisms can survive well, some survive less well, and some cannot survive at all.
	Scientists record patterns of the weather so they can make predictions.	Observe weather patterns used to describe a climate. Represent data in tables and graphs to describe weather conditions.
	Organisms' survival is affected by changes in weather and climate.	Determine the environment of a climate based on observations of weather patterns. Analyze the effect of climate on organisms' survival.
	KEY TERMS: adaptations, camouflage, environment, extinct, habitat, mimicry, population	

ASSESSMENT EVIDENCE: Students will show their learning by:

- Identifying and investigating the purpose for given adaptations of traits and how they affect an animal's survivals in its given environments

KEY LEARNING EVENTS AND INSTRUCTION:

- Investigate how different adaptations are suited to different conditions within certain environments (Unit 5, Lesson 2, Hands On Activity)
- Construct a cause and effect argument on how individual traits or group behavior can increase the chances of an organism's survival and reproduction
- Explore populations that live in a variety of environments
- Examine how changes in environments affect organisms
- Develop explanations and solutions for effects caused by human activity

RANDOLPH TOWNSHIP SCHOOL DISTRICT
Science ~ Grade 3
UNIT IV: Survival of Organisms

SUGGESTED TIME ALLOTMENT	CONTENT-UNIT OF STUDY	SUPPLEMENTAL UNIT RESOURCES
3 Weeks	**UNIT IV: Survival of Organisms**	**<u>Suggested Resources</u>** **Science Dimensions** Unit 5, Lesson 2 Unit 5, Lesson 3 Unit 5, Lesson 4 Unit Project Performance 5 Task **Brainpop** Heredity **Literary Resources** *African Acrostics* by Avis Harley *Almost Gone* by Steve Jenkins *Bats* by Jennifer Zeiger *Coral Reefs* by Jason Chin *Dear Mr. Blueberry* by Simon James *Endangered Animals* by Lynn Stone *Life in a Coral Reef* by Wendy Pfeffer *National Geographic Kids: Amazing Animal Journeys* by Laura Marsh *National Geographic Kids: Whales* by Laura Marsh * *Planting the Wild Garden* by Kathryn O. Galbrath *Rain Forest*s by Mary Pope Osborne *Seymour Simon's Poisonous Animals* by Seymour Simon *Where Do Polar Bears Live?* by Sarah Thomson *Where Have All the Pandas Gone*? by Melvin Berger

		* See Appendix A for summary

RANDOLPH TOWNSHIP SCHOOL DISTRICT
Science ~ Grade 3
UNIT V: Changes to Organisms' Environments

TRANSFER: Analyze climate's effect on organisms and their survival over time.

STANDARDS / GOALS:	**ENDURING UNDERSTANDINGS**	**ESSENTIAL QUESTIONS**
3-LS4-1: Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived a long time ago. **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. **3-ESS2-2:** Obtain and combine information to describe climates in different regions of the world. **3-5-ESS1-1:** Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season **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 solutions to a problem based on how well they meet the criteria and constraints of the design problem. **ELA/Literacy:** RI.3.1 RI.3.2 RI.3.7	Scientists observe and analyze patterns in natural systems to identify ancestry and diversity.	• How do scientists develop identify when and where organisms lived?
	A system can be described in terms of its components and their interactions.	• How can an environmental system be described?
	Knowledge of relevant scientific concepts and research findings is important to engineering.	• How do engineers design solutions?
	KNOWLEDGE	**SKILLS**
	Students will know: Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years. A variety of natural hazards result from natural processes yet humans can take steps to reduce their impacts. Possible solutions to a problem are limited by available constraints and their success is determined by considering criteria.	**Students will be able to:** Obtain and combine information to describe climates in different regions of the world. Evaluate the merit of a design solution that reduces the impacts of a weather-related hazard. Define a simple design problem that includes specified criteria for success and constraints.

RI.3.8 W.3.1 W.3.7 W.3.8 SL.3.4 **Math:** MP.2 MP.4 MP.5 3.MD.A.2 3.MD.B.3 3.MD.B.4	Some plants and animals that once lived on Earth are extinct and can be studied through fossils. Fossils provide historical evidence about extinct animals and their habitats. When the environment changes, some organisms survive and reproduce, while others move to new locations, adapt and become extinct. Groups of animals live in a variety of habitats Change in those habitats affects the organisms living there. **KEY TERMS:** atmosphere, climate, hazard, precipitation, rain gauge, thermometer, weather, wind vane, fossil, aquatic, extinct, terrestrial	Identify and explore evidence of extinct animals. Analyze and interpret data from fossils to provide evidence of animals that are extinct. Explore extinct animals and their habitats. Observe fossils to identify animals and the environments in which they lived. Categorize extinct animals based on environment. Determine reasons for why animals became extinct or the external factors that caused adaptations. Communicate a claim about how changes in the environment affect changes in the organisms that live there. Identify groups animals and the habitats in which they live. Evaluate how populations change as a result of the habitat in which they live.
	S**tudents will know:** Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years.	**Students will be able to:** Obtain and combine information to describe climates in different regions of the world.

	A variety of natural hazards result from natural processes yet humans can take steps to reduce their impacts.	Evaluate the merit of a design solution that reduces the impacts of a weather-related hazard.
	Possible solutions to a problem are limited by available constraints and their success is determined by considering criteria.	Define a simple design problem that includes specified criteria for success and constraints.
	Some plants and animals that once lived on Earth are extinct and can be studied through fossils.	Identify evidence of extinct animals. Explore evidence of animals that previously existed. Analyze and interpret data from fossils to provide evidence of organisms that no longer exists.
	Fossils provide historical evidence about extinct animals and their habitats.	Explore extinct animals and their habitats. Observe fossils to provide evidence of the organisms and the environments in which they lived. Categorize extinct animal based on environment.
	When the environment changes some organisms survive and reproduce, others move to new locations, adapt and become extinct.	Examine evidence of animals that have become extinct and/or have adapted. Determine reasons for why animals became extinct or the external factors that caused adaptations. Communicate a claim about how changes in the environment affect changes in the organisms that live there.

	Populations live in a variety of habitats, and change in those habitats affects the organisms living there. **KEY TERMS:** atmosphere, climate, hazard, precipitation, rain gauge, thermometer, weather, wind vane, fossil, aquatic, extinct, terrestrial	Evaluate how populations change as a result of the habitat in which they live.

ASSESSMENT EVIDENCE: Students will show their learning by:

- Developing a safety plan for the community to stay safe in the event of a natural disaster caused by severe weather

KEY LEARNING EVENTS AND INSTRUCTION:

- Make observations and record weather observations and weather conditions in a table
- Analyze and interpret data about patterns of weather conditions across different times and locations in order to observe patterns of change that can be used to make weather predictions
- Identify hazardous weather types and recognize characteristics of specific hazardous weather types
- Explain the cause-and-effect relationship between hazardous weather, the damages it causes, and how scientists use data to predict where severe weather will occur
- Identify and evaluate characteristics of climate and weather patterns and how animals survive in them
- Plan and carry out an investigation to plan a way to control the impact of flooding
- Analyze and interpret data for fossils to provide evidence of the organisms and the environments in which they lived long ago
- Study and analyze patterns in fossils to help describe the type of environment in which organisms live

RANDOLPH TOWNSHIP SCHOOL DISTRICT
Science ~ Grade 3
UNIT V: Changes to Organisms Environments

SUGGESTED TIME ALLOTMENT	CONTENT-UNIT OF STUDY	SUPPLEMENTAL UNIT RESOURCES
4 Weeks	**UNIT V: Changes to Organisms Environments**	**Suggested Resources** **Science Dimensions** Unit 6, Lesson 1 Unit 6, Lesson 2 Unit 7, Lesson 1 Unit 7, Lesson 2 Unit 7, Lesson 3 Unit 7, Lesson 4 Unit 7 Project Performance 6 Task Performance 7 Task **Safari Montage (Use video chapters as needed)** **Brainpop** https://jr.brainpop.com/science/land/fossils/ **Other Instructional Videos** Animal Adaptations for kids https://www.youtube.com/watch?v=yY4NNxka_to Animal Adaptations Interactive Web Site http://interactivesites.weebly.com/animal-adaptations.html **Literary Resources** *A Dinosaur Named Sue* by Fay Robinson *Animals of Long Ago* by Susan Ring *Boy, Were We Wrong About Dinosaurs!* by Kathleen Kudlinski *Do Tornadoes Really Twist?* by Gilda Berger

		Floods by Libby Koponen *Floods!* by Ellen Keller *Fossils* by Ann Squire *Fossils* by Judith Stamper *Hurricane Katrina* by Peter Benoit *Manfish* by Jennifer Berne *Meteorology: The Study of Weather* by Christine Taylor-Butler *Magic School Bus: Electric Storm* by Anne Capeci *Paleontology: The Study of Prehistoric Life* by Susan Gray *Petrified Forest National Park* by David Peterson *Planting the Trees of Kenya* by Claire Nivola *Tyrannosaurus Rex vs. Velociraptor* by Jerry Pallotta *Weather* by Christine A. Caputo *Weather and Climate* by Christine A. Caputo *Weather Words and What They Mean* by Gail Gibbons *Wild Weather: Hurricanes!* by Lorraine Jean Hopping

APPENDIX A: RESOURCES

Unit I:

Engineering the ABCs by Patty O'Brien Novak
Presents how everyday things work and how engineering relates to so many parts of daily life.

Iggy Peck, Architect by Andrea Beaty
Iggy Peck has been building fabulous creations since he was two. His parents are proud of their son, though sometimes surprised by some of Iggy's more inventive creations (like the tower he built out of used diapers). When a new second grade teacher declares her dislike of architecture, Iggy faces a challenge. He loves building too much to give it up! With Andrea Beaty's irresistible rhyming text and David Roberts' unique and stylish illustration, this book will charm creative kids everywhere.

How Do You Lift a Lion? by Robert Wells
Have you ever tried to lift a lion? Gravity makes it difficult, but you could do it with a lever. Robert E. Wells shows you how! Lively text and watercolors make you laugh while you learn the functions of levers, wheels and pulleys. Learn how to lift a lion, pull a panda, and deliver a basket of bananas to a baboon birthday party.

If I Built a Car by Chris Van Dusen
Jack describes the kind of car he would build--one with amazing accessories and with the capability of traveling on land, in the air, and on and under the sea.

11 Experiments That Failed by Jenny Offill and Nancy Carpenter
Is it possible to eat snowballs doused in ketchup—and nothing else—all winter? Can a washing machine wash dishes? By reading the step-by-step instructions, kids can discover the answers to such all-important questions along with the book's curious narrator. Here are 12 "hypotheses," as well as lists of "what you need," "what to do," and "what happened" that are sure to make young readers laugh out loud as they learn how to conduct science.

Unit II:

*Fab Four Friends: The Boys Who Became the Beatles b*y Susanna Reich
In 1957 in Liverpool, England, a young lad named John Lennon and his band played music at a local church fair. In the audience was Paul McCartney, who liked what he heard and soon joined the group. Paul's friend George Harrison kept showing up at rehearsals until the older boys finally let him in. Eventually they found the perfect drummer, Ringo Starr, and the perfect name.

The Beatles Wilma Unlimited: How Wilma Rudolph Became the World's Fastest Woman by Kathleen Krull, David Díaz
A biography of the African-American woman who overcame crippling polio as a child to become the first woman to win three gold medals in track in a single Olympics.

Unit III:

Planting the Wild Garden by Kathryn O. Galbrath
A farmer and her son plant vegetables in their garden, and the wind carries a few seeds away. Birds and animals may carry some along with them on their travels. Sometimes the rain washes them away to a new and unexpected location. And sometimes something more extraordinary occurs, as in when the pods of the Scotch Broom plant open explosively in the summer heat, scattering seed everywhere like popcorn. Year-round, we all play a role in the dispersal of seeds throughout our landscape, planting the wild garden together.