July 2022

Califon Public School
Curriculum

Subject: Science	Grade: 3	Unit #: 1	Pacing: 8 weeks
Unit Title: Animal Development and Survival			

OVERVIEW OF UNIT:

In this unit of study, students develop an understanding of the similarities and differences in organisms' life cycles. In addition, students 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. The crosscutting concepts of patterns and cause and effect are called out as organizing concepts for these disciplinary core ideas. Students demonstrate grade appropriate proficiency in developing and using models and constructing explanations and designing solutions. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Unit References	
Big Ideas	Essential Questions
• Science findings are based on recognizing patterns. • Similarities and differences in patterns can be used to sort and classify natural phenomena. • Patterns of change can be used to make predictions. • Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles • Cause-and-effect relationships are routinely identified and used to explain change. • Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing.	Do all living things have the same life cycle? How can living in a group help animals survive?
Objectives	
• Students will be able to identify commonalities and differences between plant and animal life cycles. • Students will be able to identify plant and animal behaviors and adaptations that help them survive.	

- Students will ask questions that can be investigated based on patterns such as cause and effect relationships.
- Students will define a simple problem that can be solved through the development of a new or improved object or tool.
- Students will develop models to describe phenomena.

Assessment

Students who understand the concepts are able to:

- Sort and organisms (inherited traits) using similarities and differences in patterns.
- Make predictions using patterns of change.
- Develop models to describe phenomena.
- Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. (I.e., Changes organisms go through during their life form a pattern.) Identify cause-and-effect relationships in order to explain change.
- Use evidence (e.g., observations, patterns) to construct an explanation.
- Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing. Examples of cause and-effect relationships could include: Plants that have larger thorns than other plants may be less likely to be eaten by predators. Animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring.

Formative Assessment:

- STEMscopes activities and responses
- Science station activities
- Online quizzes and activities

Summative Assessment:

- Research and poster presentation

Benchmark:

- Accessing Prior Knowledge activity

Alternative:

- Modified quizzes and activities
- Performance assessments

Key Vocabulary

Cycle, organism, survival, defense, function, group, existence, organism, birth, death, growth, development, reproduction

Resources & Materials

Assessment for the Next Generation Science Standards

July 2022

NGSS Crosscutting Concepts: Patterns

NGSS Crosscutting Concepts: Structure and Function

NGSS Core Ideas: Heredity: Inheritance and Variation of Traits

STEMscopes

Technology Infusion

Teacher Technology:

- STEMscopes
- Google Classroom
- Chromebooks
- Smart Board

Student Technology:

- STEMscopes
- Google Classroom
- Chromebooks
- Smart Board
- iPads

Activities:

- STEMscopes
- Google Classroom
- Chromebooks
- iPads

Standard	Standard Description
8.1.5.A.3	Use a graphic organizer to organize information about problem or issue.
8.1.5.A.1	Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.

Interdisciplinary Integration

Activities:

- Students will read informational text as they research the life cycle of a chosen animal. They will compile this research to create a poster. Using these posters, students will compare and contrast animal life cycles and complete a graphic organizer of their similarities and differences.

Resources:

- Teacher Vision Cross Curricular Theme Map - https://www.teachervision.com/teaching-methods/curriculum-planning/7167.html
- Engineering Go For It! - http://egfi-k12.org/
- US Department of Education STEM - http://www.ed.gov/stem
- Intel STEM Resource - http://www.intel.com/content/www/us/en/education/k12/stem.html
- NASA STEM - http://www.nasa.gov/audience/foreducators/expeditions/stem/#.VYrO2flViko
- PBS STEM - http://www.pbs.org/teachers/stem/#content
- STEM Works - http://stem-works.com/activities
- What Every Education Should Know About Using Google by Shell Education
- Promoting Literacy in all Subjects by Glencoe - http://www.glencoe.com/sec/teachingtoday/subject/promoting_literacy.phtml
- International Literacy Association Read Write Think - http://www.readwritethink.org/

Standard	Standard Description
NJSLSA.W7	Conduct short as well as more sustained research projects, utilizing an inquiry-based research process, based on focused questions, demonstrating understanding of the subject under investigation.
NJSLSA.W8.	Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
RI.3.7	Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).
SL.3.5	Create engaging audio recordings of stories or poems that demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details.

21st Century Life Skills

Activities:

- Students will watch STEMscopes videos of a Zoo Education Production Specialist and discuss the video using the guiding questions.

Standard	Standard Description
9.2.4.A.3	Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.

Careers

July 2022

Activities:

- Students will use text and media sources to research and present on the life cycle of a plant or animal.

Standard	Standard Description
CRP2	Apply appropriate academic and technical skills.
CRP7	Employ valid and reliable research strategies.
CRP11	Use technology to enhance productivity.

Standards			
Standard #	Standard Description	Student Learning Objectives	Clarification Statement
3-LS1-1	Molecules to Organisms:	Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death	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-LS4-2	Biological Evolution: Unity and Diversity	Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.	Examples of cause and effect relationships could 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.
3-5-ETS1-1	Engineering Design	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	Engineering Design	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	

3-5-ETS1-3	Engineering Design	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.	

Differentiation			
Special Education	English Language Learners (ELL)	Response to Intervention (RTI)	Enrichment
• Provide modifications & accommodations as listed in the student's IEP • Position student near helping peer or have quick access to teacher • Modify or reduce assignments/tasks • Reduce length of assignment for different mode of delivery • Increase one-to-one time • Prioritize tasks • Use graphic organizers • Use online resources for skill building • Provide teacher notes	• Provide text-to-speech • Use of translation dictionary or software • Provide graphic organizers • NJDOE resources - http://www.state.nj.us/education/aps/cccs/ELL.htm • Adapt a Strategy – Adjusting strategies for ESL students - http://www.teachersfirst.com/content/esl/adaptstrat.cfm	• Tiered interventions following RTI framework • Effective RTI strategies for teachers - http://www.specialeducationguide.com/pre-k-12/response-to-intervention/effective-rti-strategies-for-teachers/ • Interventional Central - http://www.interventioncentral.org/	• Process should be modified: higher order thinking skills, open-ended thinking, discovery • Utilize project-based learning for greater depth of knowledge • Utilize exploratory connections to higher grade concepts • Contents should be modified: real world problems, audiences, deadlines, evaluations, transformations • Learning environments should be modified: student-centered learning,

• Use collaborative grouping strategies such as small groups • NJDOE resources - http://www.state.nj.us/education/specialed/			independence, openness, complexity, groups varied • NJDOE resources - http://www.state.nj.us/education/aps/cccs/g_and_t_req.htm

July 2022

Califon Public School
Curriculum

Subject: Science	Grade: 3	Unit #: 2	Pacing: 8 weeks
Unit Title: Environments and the Traits of Organisms			

OVERVIEW OF UNIT:

In this unit of study, students acquire an understanding that organisms have different inherited traits and that the environment can also affect the traits that an organism develops. The crosscutting concepts of patterns and cause and effect are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in analyzing and interpreting data, constructing explanations, and designing solutions. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Unit References

Big Ideas	Essential Questions
• Similarities and differences in patterns can be used to sort and classify natural phenomena (e.g., inherited traits that occur naturally). • Many characteristics of organisms are inherited from their parents. • Different organisms vary in how they look and function because they have different inherited information. ● Cause-and-effect relationships are routinely identified and used to explain change. ● Other characteristics, which can range from diet to learning, result from individuals' interaction with the environment. ● Many characteristics involve both inheritance and environment. ● The environment also affects the traits that an organism develops.	What kinds of traits are passed on from parent to offspring? What environmental factors might influence the traits of a specific organism? What kinds of traits are passed on from parent to offspring? What environmental factors might influence the traits of a specific organism?

Objectives

- Students will be able to identify and differentiate between inherited and environmental traits.
- Students will be able to identify environmental factors that might influence the traits of a specific organism.
- Students will analyze and interpret data to make sense of phenomena using logical reasoning.

July 2022

Assessment

Students who understand the concepts are able to:

- Sort and classify natural phenomena using similarities and differences. (Clarification: Patterns are the similarities and differences in traits shared between offspring and their parents or among siblings, with an emphasis on organisms other than humans).
- Analyze and interpret data to make sense of phenomena using logical reasoning.
- Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.
- Identify cause-and-effect relationships in order to explain change.
- Use evidence (e.g., observations, patterns) to support an explanation.
- Use evidence to support the explanation that traits can be influenced by the environment.

Formative Assessment:

- STEMscopes activities and responses
- Science station activities
- Online quizzes and activities

Summative Assessment:

- Research and poster presentation

Benchmark:

- Accessing Prior Knowledge activity

Alternative:

- Modified quizzes and activities
- Performance assessments

Key Vocabulary

Inherit, trait, organism, environmental factor, characteristic, evidence, parent, offspring, variations, learned behavior, diet, explanation, interactions

Resources & Materials

NSTA Web Seminar: Teaching NGSS in Elementary School—Third Grade

July 2022

Teaching NGSS in K-5: Constructing Explanations from Evidence

NGSS Core Ideas: Heredity: Inheritance and Variation of Traits

STEMscopes

Technology Infusion

Teacher Technology:

- Google Classroom
- STEMscopes
- Chromebooks
- Smart board

Student Technology:

- Google Classroom
- STEMscopes
- Chromebooks
- iPads

Activities:

- Google Classroom
- STEMscopes videos and activities
- Chromebooks
- iPads

Standard	Standard Description
8.1.5.A.1	Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
8.1.5.A.2	Format a document using a word processing application to enhance text and include graphics, symbols and/ or pictures.

Interdisciplinary Integration

Activities:

- Students will survey students about inherited and learned behaviors and graph the data.

Resources:

- Teacher Vision Cross Curricular Theme Map - https://www.teachervision.com/teaching-methods/curriculum-planning/7167.html
- Engineering Go For It! - http://egfi-k12.org/
- US Department of Education STEM - http://www.ed.gov/stem
- Intel STEM Resource - http://www.intel.com/content/www/us/en/education/k12/stem.html
- NASA STEM - http://www.nasa.gov/audience/foreducators/expeditions/stem/#.VYrO2flViko
- PBS STEM - http://www.pbs.org/teachers/stem/#content
- STEM Works - http://stem-works.com/activities
- What Every Education Should Know About Using Google by Shell Education
- Promoting Literacy in all Subjects by Glencoe - http://www.glencoe.com/sec/teachingtoday/subject/promoting_literacy.phtml
- International Literacy Association Read Write Think - http://www.readwritethink.org/

Standard	Standard Description
3.MD.B.3	Draw a scaled picture graph and 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.MD.B.4	Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.
RI.3.2	Determine the main idea of a text; recount the key details and explain how they support the main idea.
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.
W.3.2	Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
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.

21st Century Life Skills

Activities:

- Students will watch career connections video on farming and discuss key points.

Standard	Standard Description
9.2.4.A.3	Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.

Careers

Activities:

- Students will discuss the environmental impacts humans can have on the environment.

July 2022

Standard	Standard Description
CRP4	Communicate clearly and effectively and with reason.

Standards			
Standard #	Standard Description	Student Learning Objectives	Clarification Statement
3-LS3-1	Heredity: Inheritance and Variation of Traits	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.	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	Heredity: Inheritance and Variation of Traits	Use evidence to support the explanation that traits can be influenced by the environment.	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.
3-5-ETS1-1	Engineering Design	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	Engineering Design	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	
3-5-ETS1-3	Engineering Design	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.	

Differentiation			
Special Education	English Language Learners (ELL)	Response to Intervention (RTI)	Enrichment

• Provide modifications & accommodations as listed in the student's IEP • Position student near helping peer or have quick access to teacher • Modify or reduce assignments/tasks • Reduce length of assignment for different mode of delivery • Increase one-to-one time • Prioritize tasks • Use graphic organizers • Use online resources for skill building • Provide teacher notes • Use collaborative grouping strategies such as small groups • NJDOE resources - http://www.state.nj.us/education/specialed/	• Provide text-to-speech • Use of translation dictionary or software • Provide graphic organizers • NJDOE resources - http://www.state.nj.us/education/aps/cccs/ELL.htm • Adapt a Strategy – Adjusting strategies for ESL students - http://www.teachersfirst.com/content/esl/adaptstrat.cfm	• Tiered interventions following RTI framework • Effective RTI strategies for teachers - http://www.specialeducationguide.com/pre-k-12/response-to-intervention/effective-rti-strategies-for-teachers/ • Interventional Central - http://www.interventioncentral.org/	• Process should be modified: higher order thinking skills, open-ended thinking, discovery • Utilize project-based learning for greater depth of knowledge • Utilize exploratory connections to higher grade concepts • Contents should be modified: real world problems, audiences, deadlines, evaluations, transformations • Learning environments should be modified: student-centered learning, independence, openness, complexity, groups varied • NJDOE resources - http://www.state.nj.us/education/aps/cccs/g_and_t_req.htm

July 2022

Califon Public School
Curriculum

Subject: Science	Grade: 3	Unit #: 3	Pacing: 8 weeks
Unit Title: Organisms Change Over Time			

OVERVIEW OF UNIT:

In this unit of study, students develop an understanding of the idea that when the environment changes, some organisms survive and reproduce, some move to new locations, some move into the transformed environment, and some die. The crosscutting concepts of cause and effect and the interdependence of science, engineering, and technology are called out as organizing concepts for these disciplinary core ideas. Students demonstrate grade-appropriate proficiency in engaging in argument from evidence. Students are also expected to use this practice to demonstrate understanding of the core ideas.

Unit References	
Big Ideas	Essential Questions
• Cause-and-effect relationships are routinely identified and used to explain change. • Knowledge of relevant scientific concepts and research findings is important in engineering. • For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. • Organisms and their habitat make up a system in which the parts depend on each other. • Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size • Cause and effect relationships are routinely identified and used to explain change • When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die.	Why have some species gone extinct? Why are fossils sometimes found in places that don't make sense? In a particular habitat, why do some organisms survive well, some survive less well, and some not survive at all?

• Populations live in a variety of habitats and change in those habitats affects the organisms living there. • Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing.	

Objectives

- Students will be able to identify reasons why species have gone extinct.
- Students will make inferences about the past geography of a region.
- Students will describe the benefits of variations within a species?
- Students will construct an argument with evidence, data, and/or a model.
- Students will make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem.

Assessment

Students who understand the concepts are able to:
• Identify cause-and-effect relationships in order to explain change.
• Construct an argument with evidence.
• Construct an argument with evidence (e.g., needs and characteristics of the organisms and habitats involved) that in a particular habitat, some organisms can survive well, some survive less well, and some cannot survive at all.

Formative Assessment:

- STEMscopes activities and responses
- Science station activities
- Online quizzes and activities

Summative Assessment:

- Research and poster presentation

Benchmark:

- Accessing Prior Knowledge activity

Alternative:

- Modified quizzes and activities
- Performance assessments

July 2022

Key Vocabulary
Organism, environment, adapt, adaptation, trait
Resources & Materials
NGSS Crosscutting Concepts: Stability and Change NGSS Core Ideas: Ecosystems: Interactions, Energy, and Dynamics NGSS Core Ideas: Biological Evolution: Unity and Diversity

Technology Infusion

Teacher Technology:

- Google Classroom
- STEMscopes
- Chromebooks
- Smart board

Student Technology:

- Google Classroom
- STEMscopes
- Chromebooks
- iPads

Activities:

- Google Classroom
- STEMscopes videos and activities
- Chromebooks
- iPads

Standard	Standard Description
8.1.5.A.2	Format a document using a word processing application to enhance text and include graphics, symbols and/ or pictures.

Interdisciplinary Integration

Activities:

- Student will complete close reading of scientific texts in order to better understand the content.

Resources:

- Teacher Vision Cross Curricular Theme Map - https://www.teachervision.com/teaching-methods/curriculum-planning/7167.html
- Engineering Go For It! - http://egfi-k12.org/
- US Department of Education STEM - http://www.ed.gov/stem
- Intel STEM Resource - http://www.intel.com/content/www/us/en/education/k12/stem.html
- NASA STEM - http://www.nasa.gov/audience/foreducators/expeditions/stem/#.VYrO2flViko
- PBS STEM - http://www.pbs.org/teachers/stem/#content
- STEM Works - http://stem-works.com/activities
- What Every Education Should Know About Using Google by Shell Education
- Promoting Literacy in all Subjects by Glencoe - http://www.glencoe.com/sec/teachingtoday/subject/promoting_literacy.phtml
- International Literacy Association Read Write Think - http://www.readwritethink.org/

Standard	Standard Description
RI.3.10.	By the end of the year, read and comprehend literary nonfiction at grade level text-complexity or above, with scaffolding as needed.
RI.3.1	Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
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.
W.3.1	Write opinion pieces on topics or texts, supporting a point of view with reasons.
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.
MP.2	Reason abstractly and quantitatively.

21st Century Life Skills

Activities:

- Students will watch the content connections video about archaeologists and discuss the key points.

Standard	Standard Description
9.2.4.A.3	Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.

Careers

Activities:

- Students will work in teams to research an endangered species and create a PSA to help protect the species.

Standard	Standard Description

CRP4	Communicate clearly and effectively and with reason.
CRP5	Consider the environmental, social and economic impacts of decisions.
CRP7	Employ valid and reliable research strategies.
CRP11	Use technology to enhance productivity.
CRP12	Work productively in teams while using cultural global competence.

Standards			
Standard #	Standard Description	Student Learning Objectives	Clarification Statement
3-LS2-1	Ecosystems: Interactions, Energy, and Dynamics	Construct an argument that some animals form groups that help members survive	
3-LS4-1	Biological Evolution: Unity and Diversity	Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.	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-LS4-3	Biological Evolution: Unity and Diversity	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.	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	Biological Evolution: Unity and Diversity	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.	Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms.] [Assessment Boundary: Assessment is limited to a single environmental change. Assessment does

			not include the greenhouse effect or climate change.
3-5-ETS1-1	Engineering Design	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	Engineering Design	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	
3-5-ETS1-3	Engineering Design	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.	

Differentiation			
Special Education	English Language Learners (ELL)	Response to Intervention (RTI)	Enrichment
• Provide modifications & accommodations as listed in the student's IEP • Position student near helping peer or have quick access to teacher • Modify or reduce assignments/tasks • Reduce length of assignment for different mode of delivery • Increase one-to-one time • Prioritize tasks • Use graphic organizers • Use online resources for skill building • Provide teacher notes	• Provide text-to-speech • Use of translation dictionary or software • Provide graphic organizers • NJDOE resources - http://www.state.nj.us/education/aps/cccs/ELL.htm • Adapt a Strategy – Adjusting strategies for ESL students - http://www.teachersfirst.com/content/esl/adaptstrat.cfm	• Tiered interventions following RTI framework • Effective RTI strategies for teachers - http://www.specialeducationguide.com/pre-k-12/response-to-intervention/effective-rti-strategies-for-teachers/ • Interventional Central - http://www.interventioncentral.org/	• Process should be modified: higher order thinking skills, open-ended thinking, discovery • Utilize project-based learning for greater depth of knowledge • Utilize exploratory connections to higher grade concepts • Contents should be modified: real world problems, audiences, deadlines, evaluations, transformations • Learning environments should be modified: student-centered learning,

• Use collaborative grouping strategies such as small groups • NJDOE resources - http://www.state.nj.us/education/specialed/			independence, openness, complexity, groups varied • NJDOE resources - http://www.state.nj.us/education/aps/cccs/g_and_t_req.htm

July 2022

Califon Public School
Curriculum

Subject: Science	Grade: 3	Unit #: 5	Pacing: 8 weeks
Unit Title: Dealing with Hazardous Weather Worldwide			

OVERVIEW OF UNIT:

In this unit of study, students organize and use data to describe typical weather conditions expected during a particular season. By applying their understanding of weather-related hazards, students are able to make a claim about the merit of a design solution that reduces the impacts of such hazards. The crosscutting concepts of *patterns, cause and effect*, and the *influence of engineering, technology, and science on society and the natural world* are called out as organizing concepts for these disciplinary core ideas. Students demonstrate grade-appropriate proficiency in a*sking questions and defining problems, analyzing and interpreting data, engaging in argument from evidence*, and *obtaining, evaluating, and communicating information*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Unit References	
Big Ideas	Essential Questions
● Patterns of change can be used to make predictions. ● Scientist record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next. ● Patterns of change can be used to make predictions. ● Climate describes the range of an area's typical weather conditions and the extent to which those conditions vary over years. ● Cause-and-effect relationships are routinely identified, tested, and used to explain change. ● Science affects everyday life. ● People's needs and wants change over time, as do their demands for new and improved technologies. ● A variety of natural hazards result from natural processes (e.g., *flooding, fast wind, or lightning).*	What is the typical weather near our home? How can we protect people from weather-related hazards? Can we predict the kind of weather that we will see in the spring, summer, autumn, or winter? How can climates in different regions of the world be described? How can we protect people from natural hazards such as flooding, fast wind, or lightening?

● Humans cannot eliminate natural hazards but can take steps to reduce their impacts. ● Engineers improve technologies or develop new ones to increase their benefits (e.g., better artificial limbs), decrease known risks (e.g., seatbelts in cars), and meet societal demands (e.g., cell phones). ● Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). ● Different proposals for solutions can be compared on the basis of how well each one meets the criteria for success or how well each takes the constraints into account.	

Objectives

- Students will be able to identify weather hazards where they live.
- Students will identify ways people protect themselves from natural hazards.
- Students will represent data in tables and various graphical displays (bar graphs and pictographs) to reveal patterns that indicate relationships.
- Students will obtain and combine information from books and other reliable media to explain phenomena.

Assessment

Students who understand the concepts can:

- Make predictions using patterns of change.
- Represent data in tables, bar graphs, and pictographs to reveal patterns that indicate relationships.
- Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. *(Assessment of graphical displays is limited to pictographs and bar graphs. Assessment does not include climate change.)* Examples of data could include:
  - ✓ Average temperature
  - ✓ Precipitation
  - ✓ Wind direction

Students who understand the concepts can:

- Obtain and combine information from books and other reliable media to explain phenomena.

Students who understand the concepts can:

- Identify and test cause-and-effect relationships to explain change.
- Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem.
- Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard. Examples of design solutions to weather-related hazards could include:
  - ✓ Barriers to prevent flooding
  - ✓ Wind-resistant roofs
  - ✓ Lightning rods
- Define a simple design problem that can be solved through the development of an object, tool, process, or system and include several criteria for success and constraints on materials, time, or cost.
- Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

Formative Assessment:

- STEMscopes activities and responses
- Science station activities
- Online quizzes and activities

Summative Assessment:

- Research and poster presentation

Benchmark:

- Accessing Prior Knowledge activity

Alternative:

- Modified quizzes and activities
- Performance assessments

Key Vocabulary
Weather, climate, natural hazard, temperature, precipitation
Resources & Materials
Teaching NGSS in Elementary School—Third Grade **NSTA Web Seminar: Teaching NGSS in K-5: Constructing Explanations from Evidence** **NGSS Core Ideas: Earth's Systems**

Technology Infusion

Teacher Technology:

- Google Classroom
- STEMscopes
- Chromebooks
- Smart board

Student Technology:

- Google Classroom
- STEMscopes
- Chromebooks
- iPads

Activities:

- Google Classroom
- STEMscopes videos and activities
- Chromebooks
- iPads

Standard	Standard Description
8.1.5.A.3	Use a graphic organizer to organize information about a problem or issue.

Interdisciplinary Integration

Activities:

- In a combined social studies and science project, students will study homes around the world and how humans adapt their homes to protect themselves from the dangerous weather of a location.

Resources:

- Teacher Vision Cross Curricular Theme Map - https://www.teachervision.com/teaching-methods/curriculum-planning/7167.html
- Engineering Go For It! - http://egfi-k12.org/
- US Department of Education STEM - http://www.ed.gov/stem
- Intel STEM Resource - http://www.intel.com/content/www/us/en/education/k12/stem.html
- NASA STEM - http://www.nasa.gov/audience/foreducators/expeditions/stem/#.VYrO2flViko

- PBS STEM - http://www.pbs.org/teachers/stem/#content
- STEM Works - http://stem-works.com/activities
- What Every Education Should Know About Using Google by Shell Education
- Promoting Literacy in all Subjects by Glencoe - http://www.glencoe.com/sec/teachingtoday/subject/promoting_literacy.phtml
- International Literacy Association Read Write Think - http://www.readwritethink.org/

Standard	Standard Description
6.1.4.B.4	Describe how landforms, climate and weather, and availability of resources have impacted where and how people live and work in different regions of New Jersey and the United States.
RI.3.1	Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (
RI.3.9	Compare and contrast the most important points and key details presented in two texts on the same topic.

21st Century Life Skills

Activities:

- Students will investigate the job of a meteorologist by watching connecting STEMscopes video and reading related texts. They will research the tools used used by meteorologists and create their own weathervanes and anonmeters.

Standard	Standard Description
9.2.4.A.3	Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.

Careers

Activities: Students will work in teams to design and build a model of a home made to protect its inhabitants from a specific natural disaster.

Standard	Standard Description
CRP6	Demonstrate creativity and innovation.
CRP12	Work productively in teams while using cultural global competence.

Standards

Standard #	Standard Description	Student Learning Objectives	Clarification Statement
ESS2.D		Develop a model using an analogy, to describe how weather and climate are related	

3-ESS2-1	Earth's Systems	Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.	Examples of data could include average temperature, precipitation, and wind direction.] [Assessment Boundary: Assessment of graphical displays is limited to pictographs and bar graphs. Assessment does not include climate change.
3-ESS2-2	Earth's Systems	Obtain and combine information to describe climates in different regions of the world.	
3-ESS3-1	Earth and Human Activity	Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.	Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, and lightning rods.
3-5-ETS1-1	Engineering Design	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	Engineering Design	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	
3-5-ETS1-3	Engineering Design	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.	

Differentiation			
Special Education	English Language Learners (ELL)	Response to Intervention (RTI)	Enrichment
• Provide modifications & accommodations as listed in the student's IEP • Position student near helping peer or have quick access to teacher • Modify or reduce assignments/tasks	• Provide text-to-speech • Use of translation dictionary or software • Provide graphic organizers • NJDOE resources - http://www.state.nj.us/education/aps/cccs/ELL.htm • Adapt a Strategy – Adjusting strategies for ESL students -	• Tiered interventions following RTI framework • Effective RTI strategies for teachers - http://www.specialeducationguide.com/pre-k-12/response-to-intervention/effective-rti-strategies-for-teachers/	• Process should be modified: higher order thinking skills, open-ended thinking, discovery • Utilize project-based learning for greater depth of knowledge

• Reduce length of assignment for different mode of delivery • Increase one-to-one time • Prioritize tasks • Use graphic organizers • Use online resources for skill building • Provide teacher notes • Use collaborative grouping strategies such as small groups • NJDOE resources - http://www.state.nj.us/education/specialed/	http://www.teachersfirst.com/content/esl/adaptstrat.cfm	• Interventional Central - http://www.interventioncentral.org/	• Utilize exploratory connections to higher grade concepts • Contents should be modified: real world problems, audiences, deadlines, evaluations, transformations • Learning environments should be modified: student-centered learning, independence, openness, complexity, groups varied • NJDOE resources - http://www.state.nj.us/education/aps/cccs/g_and_t_req.htm

July 2022

Califon Public School
Curriculum

Subject: Science	Grade: 3	Unit #: 6	Pacing: 7 weeks
Unit Title: Using Magnetic Force			

OVERVIEW OF UNIT:

In this unit of study, students determine the effects of balanced and unbalanced forces on the motion of an object and the cause-and-effect relationships of electrical or magnetic interactions to define a simple design problem that can be solved with magnets. The crosscutting concept of cause and effect, and the interdependence of science, engineering, and technology, and the influence of engineering, technology, and science on society and the natural world are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in asking questions and defining problems. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Unit References	
Big Ideas	Essential Questions
• Cause-and-effect relationships are routinely identified, tested, and used to explain change. • Electric and magnetic forces between a pair of objects do not require that the objects be in contact. • The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other. • The sizes of the forces in each situation depend on the properties of the objects and their distances apart. • Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object's speed or direction of	How can we use our understandings about magnets to solve problems? What are the relationships between electrical and magnetic forces? How do equal and unequal forces on an object affect the object? Can we use patterns that we observed to predict the future?

motion. (Boundary: Qualitative and conceptual, but not quantitative addition of forces, are used at this level.) • The patterns of an object's motion in various situations can be observed and measured; when that past motion exhibits a regular pattern, future motion can be predicted from it. (Boundary: Technical terms, such as magnitude, velocity, momentum, and vector quantity, are not introduced at this level, but the concept that some quantities need both size and direction to be described is developed.) • Patterns of change can be used to make predictions. • Objects in contact exert forces on each other. • Science findings are based on recognizing patterns.	

Objectives

- Students will use their understandings about magnets to solve problems.
- Students will identify relationships between electrical and magnetic forces.
- Students will plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.
- Students will make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution.
- Students will define a simple problem that can be solved through the development of a new or improved object or tool.

Assessment

Students who understand the concepts are able to:

- Define a simple problem that can be solved through the development of a new or improved object or tool.
- Define a simple design problem that can be solved by applying scientific ideas about magnets (e.g., constructing a latch to keep a door shut or creating a device to keep two moving objects from touching each other).
- Define a simple design problem that can be solved through the development of an object, tool, process, or system, and include several criteria for success and constraints on material, time, or cost.
- Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

Formative Assessment:

- STEMscopes activities and responses
- Science station activities

- Online quizzes and activities

Summative Assessment:
- Research and poster presentation

Benchmark:
- Accessing Prior Knowledge activity

Alternative:
- Modified quizzes and activities
- Performance assessments

Key Vocabulary

Magnetism, electricity

Resources & Materials

Connections Between Practices in NGSS, Common Core Math, and Common Core ELA

Engineering Design as a Core Idea

NGSS Core Ideas: Motion and Stability: Forces and Interactions

Technology Infusion

Teacher Technology:
- Google Classroom
- STEMscopes
- Smart board

Student Technology:
- Google Classroom
- STEMscopes
- Chromebooks
- iPads

Activities:
- Google Classroom
- STEMscopes videos and activities

- Chromebooks
- iPads

Standard	Standard Description
8.1.5.A.2	Format a document using a word processing application to enhance text and include graphics, symbols and/ or pictures.

Interdisciplinary Integration

Activities:

- Students will read and respond to informational articles about electric and magnetic forces.

Resources:

- Teacher Vision Cross Curricular Theme Map - https://www.teachervision.com/teaching-methods/curriculum-planning/7167.html
- Engineering Go For It! - http://egfi-k12.org/
- US Department of Education STEM - http://www.ed.gov/stem
- Intel STEM Resource - http://www.intel.com/content/www/us/en/education/k12/stem.html
- NASA STEM - http://www.nasa.gov/audience/foreducators/expeditions/stem/#.VYrO2flViko
- PBS STEM - http://www.pbs.org/teachers/stem/#content
- STEM Works - http://stem-works.com/activities
- What Every Education Should Know About Using Google by Shell Education
- Promoting Literacy in all Subjects by Glencoe - http://www.glencoe.com/sec/teachingtoday/subject/promoting_literacy.phtml
- International Literacy Association Read Write Think - http://www.readwritethink.org/

Standard	Standard Description
RI.3.1	Ask and answer questions, and make relevant connections to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
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.
RI.3.8	Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence) to support specific points the author makes in a text. (
W.3.7	Conduct short research projects that build knowledge about a topic.
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
SL.3.3	Ask and answer questions about information from a speaker, offering appropriate elaboration and detail
MP.2	Reason abstractly and quantitatively.

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.

21st Century Life Skills	
Activities: ● Students will watch the content connections video on heat shield engineers and discuss how it relates to the science concepts they have been studying.	
Standard	**Standard Description**
9.2.4.A.3	Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes.

Careers	
Activities: ● Students will work in teams to create a pop fly launcher built from recycled and repurposed materials.	
Standard	**Standard Description**
CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP11	Use technology to enhance productivity.
CRP12	Work productively in teams while using cultural global competence.

Standards			
Standard #	Standard Description	Student Learning Objectives	Clarification Statement
3-PS2-1	Motion and Stability: Forces and Interactions	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.	Examples could include an unbalanced force on one side of a ball can make it start moving; and, balanced forces pushing on a box from both sides will not produce any motion at all. Qualitative and conceptual, but not quantitative addition of forces, are used at this level. [Assessment Boundary: Assessment is limited to one variable at a time: number, size, or direction of forces. Assessment does not include quantitative force size, only qualitative and relative. Assessment is

			limited to gravity being addressed as a force that pulls objects down.
3-PS2-2	Motion and Stability: Forces and Interactions	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion	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	Motion and Stability: Forces and Interactions	Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.	Examples of an electric force could include the force on hair from an electrically charged balloon and the electrical forces between a charged rod and pieces of paper; examples of a magnetic force could include the force between two permanent magnets, the force between an electromagnet and steel paperclips, and the force exerted by one magnet versus the force exerted by two magnets. Examples of cause and effect relationships could include how the distance between objects affects strength of the force and how the orientation of magnets affects the direction of the magnetic force.] [Assessment Boundary: Assessment is limited to forces produced by objects that can be manipulated by students, and electrical interactions are limited to static electricity.]
3-PS2-4	Motion and Stability: Forces and Interactions	Define a simple design problem that can be solved by applying scientific ideas about magnets.	Examples of problems could include constructing a latch to keep a door shut and creating a device to keep two moving objects from touching each other.
3-5-ETS1-1	Engineering Design	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	Engineering Design	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	
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		identify aspects of a model or prototype that can be improved.	

Differentiation			
Special Education	English Language Learners (ELL)	Response to Intervention (RTI)	Enrichment
• Provide modifications & accommodations as listed in the student's IEP • Position student near helping peer or have quick access to teacher • Modify or reduce assignments/tasks • Reduce length of assignment for different mode of delivery • Increase one-to-one time • Prioritize tasks • Use graphic organizers • Use online resources for skill building • Provide teacher notes • Use collaborative grouping strategies such as small groups • NJDOE resources - http://www.state.nj.us/education/specialed/	• Provide text-to-speech • Use of translation dictionary or software • Provide graphic organizers • NJDOE resources - http://www.state.nj.us/education/aps/cccs/ELL.htm • Adapt a Strategy – Adjusting strategies for ESL students - http://www.teachersfirst.com/content/esl/adaptstrat.cfm	• Tiered interventions following RTI framework • Effective RTI strategies for teachers - http://www.specialeducationguide.com/pre-k-12/response-to-intervention/effective-rti-strategies-for-teachers/ • Interventional Central - http://www.interventioncentral.org/	• Process should be modified: higher order thinking skills, open-ended thinking, discovery • Utilize project-based learning for greater depth of knowledge • Utilize exploratory connections to higher grade concepts • Contents should be modified: real world problems, audiences, deadlines, evaluations, transformations • Learning environments should be modified: student-centered learning, independence, openness, complexity, groups varied • NJDOE resources - http://www.state.nj.us/education/aps/cccs/g_and_t_req.htm

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