July 2022

Califon Public School
Curriculum

Subject: Science	Grade: 2	Unit #: 1	Pacing: 8 weeks
Unit Title: Relationships in Habitats			

OVERVIEW OF UNIT:

In this unit of study, students develop an understanding of what plants need to grow and how plants depend on animals for seed dispersal and pollination. Students also compare the diversity of life in different habitats. The crosscutting concepts of *cause and effect* and *structure and function* are called out as organizing concepts for these disciplinary core ideas. Students demonstrate grade-appropriate proficiency in *planning and carrying out investigations* and *developing and using models*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Unit References	
Big Ideas	Essential Questions
• People look for patterns and order when making observations about the world. • There are many different kinds of living things in any area, and they exist in different places on land and in water. • Events have causes that generate observable patterns. • Plants depend on water and light to grow. • The shape and stability of structures of natural and designed objects are related to their function. • Plants depend on animals for pollination or to move their seeds around. • Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people.	*How does the diversity of plants and animals compare among different habitats?* *What do plants need to live and grow?* *Why do some plants rely on animals for reproduction?*
Objectives	

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- Students will be able to explain what plants need to live and grow.
- Students will be able to demonstrate why some plants rely on animals for reproduction.
- Students will be able to compare and contrast the diversity of plants and animals amongst different habitats.
- Students will develop a simple model based on evidence to represent a proposed object or tool.
- students will plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question.
- Students will make observations (firsthand or from media) to collect data that can be used to make comparisons.

Assessment

Students who understand the concepts can:

- Describe how the shape and stability of structures are related to their function.
- Develop a simple model based on evidence to represent a proposed object or tool.
- Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.
- Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
- Observe patterns in events generated by cause-and-effect relationships.
- Plan and conduct an investigation collaboratively to produce data to serve as a basis for evidence to answer a question.
- Plan and conduct an investigation to determine whether plants need sunlight and water to grow.
- Look for patterns and order when making observations about the world.
- Make observations (firsthand or from media) to collect data that can be used to make comparisons.
- Make observations of plants and animals to compare the diversity of life in different habitats

Formative Assessment:

- Group Discussions
- Peer work

Summative Assessment:

- Projects
- Published Writing

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Benchmark:

- Access Prior Knowledge

Alternative:

- Modified Projects
- Modified Work

Key Vocabulary

Plant, seed, habitat, pollinate, reproduction

Resources & Materials

Teaching NGSS in Elementary School—Second Grade

NSTA Web Seminar: Teaching NGSS in K-5: Constructing Explanations from Evidence

NGSS Core Ideas: Earth's Systems

Do Plants Need Sunlight?

Who Needs What?

I Scream, You Scream, We All Scream for Vanilla Ice Cream!

Building and Testing Our Vanilla Plant Pollinator

Two Scoops Are Better Than One

Improving Our Vanilla Bean Pollinators
The Bug Chicks-Mission: Pollination (Episode 5)

Technology Infusion

Teacher Technology:

- Smart Board
- Google Classroom
- StemScopes

Student Technology:

- Chromebooks
- StemScopes
- Seesaw

Activities:

- The students are using the chromebooks to reflect concepts learned using Seesaw.
- The students are using StemScopes to explore and discover topics being taught.

Standard	Standard Description
8.1.P.C.1	Collaborate with peers by participating in interactive digital games or activities.
8.1.2.E.1	Use digital tools and online resources to explore a problem or issue.
8.2.2.B.2	Demonstrate how reusing a product affects the local and global environment.

Interdisciplinary Integration

Activities:

- The learner will conduct close readings and apply close reading strategies 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
NJSLSA.R1	Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
W.2.7	Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations)
W.2.8	Recall information from experiences or gather information from provided sources to answer a question.

SL.2.5	Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.
MP.4	Model with mathematics.
2.MD.D.10	Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. (

21st Century Life Skills	
Activities: ● The learner will participate in an exploration of jobs pertaining to life science.	
Standard	**Standard Description**
9.2.4.A.1	Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.

Careers	
Activities: ● The learner will participate in STEAM building activities that address the science content and apply critical thinking skills while persevering in solving the task at hand.	
Standard	**Standard Description**
CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.

Standards			
Standard #	Standard Description	Student Learning Objectives	Clarification Statement
2-LS2-1	**Ecosystems: Interactions, Energy, and Dynamics**	**Plan and conduct an investigation to determine if plants need sunlight and water to grow.**	**Assessment Boundary: Assessment is limited to testing one variable at a time.**
2-LS2-2	**Ecosystems: Interactions, Energy, and Dynamics**	**Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.***	

2-LS4-1	**Ecosystems: Interactions, Energy, and Dynamics**	**Make observations of plants and animals to compare the diversity of life in different habitats.**	**Emphasis is on the diversity of living things in each of a variety of different habitats.] [Assessment Boundary: Assessment does not include specific animal and plant names in specific habitats.]**
K-2-ETS1-1	**Engineering Design**	**Ask questions, make observations, and gather information about a situation people want to change (e.g., climate change) to define a simple problem that can be solved through the development of a new or improved object or tool.**	
K-2-ETS1-2	**Engineering Design**	**Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.**	
K-2-ETS1-3	**Engineering Design**	**Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.**	

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: 2	Unit #: 2	Pacing: 8 weeks
Unit Title: Properties of Matter			

OVERVIEW OF UNIT:

In this unit of study, students demonstrate an understanding of observable properties of materials through analysis and classification of different materials. 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 planning and carrying out investigations and analyzing and interpreting data. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Unit References

Big Ideas	Essential Questions
● Patterns in the natural and human-designed world can be observed. ● Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. ● Matter can be described and classified by its observable properties. ● Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world. ● Simple tests can be designed to gather evidence to support or refute student ideas about causes. ● Different properties are suited to different purposes. ● Because there is always more than one possible solution to a problem, it is useful to compare and test designs.	How can we sort objects into groups that have similar patterns? Can some materials be a solid or a liquid?

Objectives

- Students will be able to sort objects into groups that have similar patterns.

- Students will be able to identify materials as a solid or a liquid.

Assessment

Students who understand the concepts can:

- Observe patterns in the natural and human-designed world.
- Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question.
- Plan and conduct an investigation to describe and classify different kinds of material by their observable properties.
  - ✓ Observations could include color, texture, hardness, and flexibility.
  - ✓ Patterns could include the similar properties that different materials share.
- Design simple tests to gather evidence to support or refute student ideas about causes.
- Analyze data from tests of an object or tool to determine if it works as intended.
- Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose. (Assessment of quantitative measurements is limited to length.) Examples of properties could include:
  - ✓ Strength
  - ✓ Flexibility
  - ✓ Hardness
  - ✓ Texture
  - ✓ Absorbency

Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of each.

Formative Assessment:

- Group Discussions
- Peer work

Summative Assessment:

- Projects
- Published Writing

July 2022

Benchmark:

- Access Prior Knowledge

Alternative:

- Modified Projects
- Modified Work

Key Vocabulary

Solid, liquid, gas, properties

Resources & Materials

Using the NGSS Practices in the Elementary Grades

Teaching *NGSS* in K-5: Constructing Explanations from Evidence

NSTA Web Seminar: NGSS Core Ideas: Matter and Its Interactions

Exploring Reversible Changes of State and Exploring Irreversible Changes of State

Discovering Science: classifying and categorizing (matter, grades 2-3)

Materials and Their Properties, lessons Comparing the Properties of Different Materials (pp. 22); and Exploring Thermal Insulators and Conductors (pp. 23):

The Properties of Materials and their Everyday Uses

Matter song a music video by untamed Science

Science Games For Kids: Properties of Materials

Technology Infusion

Teacher Technology:

- Smart Board
- Google Classroom
- StemScopes

Student Technology:

- Chromebooks
- StemScopes

- Seesaw

Activities:

- The students are using the chromebooks to reflect concepts learned using Seesaw.
- The students are using StemScopes to explore and discover topics being taught.

Standard	Standard Description
8.1.P.C.1	Collaborate with peers by participating in interactive digital games or activities.
8.1.2.E.1	Use digital tools and online resources to explore a problem or issue.
8.2.2.B.2	Demonstrate how reusing a product affects the local and global environment.

Interdisciplinary Integration

Activities:

- The learner will conduct close readings and apply close reading strategies 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
NJSLSA.R1	Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
RI.2.1	Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
RI.2.3	Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.
RI.2.8	Describe how reasons support specific points the author makes in a text.

W.2.1	Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., because, and, also) to connect opinion and reasons, and provide a concluding statement or section
W.2.7	Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).

21st Century Life Skills	
Activities: ● The learner will participate in an exploration of jobs pertaining to matter.	
Standard	**Standard Description**
9.2.4.A.1	Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.

Careers	
Activities: ● The learner will participate in STEAM building activities that address the science content and apply critical thinking skills while persevering in solving the task at hand.	
Standard	**Standard Description**
CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.

Standards			
Standard #	Standard Description	Student Learning Objectives	**Clarification Statement**
2-PS1-1	**Matter and Its Interactions**	**Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties**	**Observations could include color, texture, hardness, and flexibility. Patterns could include the similar properties that different materials share.**
2-PS1-2	**Matter and Its Interactions**	**Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.**	**Examples of properties could include, strength, flexibility, hardness, texture, and absorbency. [Assessment Boundary:**

			Assessment of quantitative measurements is limited to length.]
K-2-ET S1-1	**Engineering Design**	**Ask questions, make observations, and gather information about a situation people want to change (e.g., climate change) to define a simple problem that can be solved through the development of a new or improved object or tool.**	
K-2-ET S1-2	**Engineering Design**	**Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.**	
K-2-ET S1-3	**Engineering Design**	**Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.**	

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	• 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

• 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/			• 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:2	Unit #:3	Pacing: 8 weeks
Unit Title: Changes to Matter			

OVERVIEW OF UNIT:

In this unit of study, students continue to develop an understanding of observable properties of materials through analysis and classification of different materials. The crosscutting concepts of *cause and effect* and *energy and matter* are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in *constructing explanations*, *designing solutions*, and *engaging in argument from evidence*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Unit References	
Big Ideas	Essential Questions
• Objects may break into smaller pieces and be put together into larger pieces or change shapes. • Different properties are suited to different purposes. • A great variety of objects can be built up from a small set of pieces. • People search for cause-and-effect relationships to explain natural events. • Events have causes that generate observable patterns. • Heating or cooling a substance may cause changes that can be observed. Sometimes these changes are reversible, and sometimes they are not. • Scientists search for cause and effect relationships to explain natural events.	• How can objects change? • Are all changes reversible? • In what ways can an object made of a small set of pieces be disassembled and made into a new object? • Can all changes caused by heating or cooling be reversed?
Objectives	

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- Students will be able to describe how objects change.
- Students will be able to assemble a small set of pieces into a new object.
- Students will be able to observe changes caused by heating or cooling and explain if they can be reversed

Assessment

- Break objects into smaller pieces and put them together into larger pieces or change shapes.
- Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena.
- Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.
- Observe patterns in events generated due to cause-and-effect relationships.
- Construct an argument with evidence to support a claim.
- Construct an argument with evidence that some changes caused by heating or cooling can be reversed, and some cannot.
    - ✓ Examples of reversible changes could include materials such as water and butter at different temperatures.
    - ✓ Examples of irreversible changes could include:
        - ➢ Cooking an egg
        - ➢ Freezing a plant leaf
        - ➢ Heating paper

Formative Assessment:

- Group Discussions
- Peer work

Summative Assessment:

- Projects
- Published Writing

Benchmark:

- Access Prior Knowledge

Alternative:

- Modified Projects
- Modified Work

Key Vocabulary
Cause, effect, temperature, disassembled, reversible
Resources & Materials
https://www.nextgenscience.org

Technology Infusion

Teacher Technology:

- Smart Board
- Google Classroom
- StemScopes

Student Technology:

- Chromebooks
- StemScopes
- Seesaw

Activities:

- The students are using the chromebooks to reflect concepts learned using Seesaw.
- The students are using StemScopes to explore and discover topics being taught.

Standard	Standard Description
8.1.P.C.1	Collaborate with peers by participating in interactive digital games or activities.
8.1.2.E.1	Use digital tools and online resources to explore a problem or issue.
8.2.2.B.2	Demonstrate how reusing a product affects the local and global environment.

Interdisciplinary Integration

Activities:

- The learner will conduct close readings and apply close reading strategies to better understand the content.

Resources:

- Teacher Vision Cross Curricular Theme Map - https://www.teachervision.com/teaching-methods/curriculum-planning/7167.html
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- 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
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RI.2.3	Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.
RI.2.8	Describe how reasons support specific points the author makes in a text.
W.2.1	Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., because, and, also) to connect opinion and reasons, and provide a concluding statement or section
W.2.7	Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).

21st Century Life Skills

Activities:

- The learner will participate in an exploration of jobs pertaining to matter.

Standard	Standard Description
9.2.4.A.1	Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.

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Careers
Activities: ● The learner will participate in STEAM building activities that address the science content and apply critical thinking skills while persevering in solving the task at hand.

Standard	Standard Description
CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.

Standards			
Standard #	Standard Description	Student Learning Objectives	Clarification Statement
2-PS1-3	Matter and Its Interactions	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.	Examples of pieces could include blocks, building bricks, or other assorted small objects.
2-PS1-4	Matter and Its Interactions	Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.	Examples of reversible changes could include materials such as water and butter at different temperatures. Examples of irreversible changes could include cooking an egg, freezing a plant leaf, and heating paper.
K-2-ETS1-1	**Engineering Design**	**Ask questions, make observations, and gather information about a situation people want to change (e.g., climate change) to define a simple problem that can be solved through the development of a new or improved object or tool.**	
K-2-ETS1-2	**Engineering Design**	**Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.**	
K-2-ETS1-3	**Engineering Design**	**Analyze data from tests of two objects designed to solve the same problem to**	

		compare the strengths and weaknesses of how each performs.	

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: 2	Unit #: 4	Pacing: 8 weeks
Unit Title: The Earth's Land and Water			

OVERVIEW OF UNIT:

In this unit of study, students use information and models to identify and represent the shapes and kinds of land and bodies of water in an area and where water is found on Earth. The crosscutting concept of *patterns* is called out as an organizing concept for these disciplinary core ideas. Students demonstrate grade-appropriate proficiency in *developing and using models* 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 in the natural world can be observed. • Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form. • Patterns in the natural world can be observed. • Maps show where things are located. One can map the shapes and kinds of land and water in any area.	• Where do we find water? • How can we identify where water is found on Earth and if it is solid or liquid? • In what ways can you represent the shapes and kinds of land and bodies of water in an area?

Objectives

- Students will be able to explain where we can find water.
- Students will be able to identify where water is found on Earth and if it is solid or liquid.
- Students will develop a model to represent patterns in the natural world.

Assessment

- Observe patterns in the natural world.

- Obtain information using various texts, text features (e.g., headings, tables of contents, glossaries, electronic menus, icons) and other media that will be useful in answering a scientific question.
- Obtain information to identify where water is found on Earth and to communicate that it can be a solid or liquid.
- Observe patterns in the natural world.
- Develop a model to represent patterns in the natural world.
- Develop a model to represent the shapes and kinds of land and bodies of water in an area. (*Assessment does not include quantitative scaling in models.)*

Formative Assessment:

- Group Discussions
- Peer work

Summative Assessment:

- Projects
- Published Writing

Benchmark:

- Access Prior Knowledge

Alternative:

- Modified Projects
- Modified Work

Key Vocabulary
Natural, ocean, rivers, ponds, lakes, solid, liquid, patterns, Earth
Resources & Materials
https://www.nextgenscience.org

Technology Infusion

July 2022

Teacher Technology:

- Smart Board
- Google Classroom
- StemScopes

;

Student Technology:

- Chromebooks
- StemScopes
- Seesaw

Activities:

- The students are using the chromebooks to reflect concepts learned using Seesaw.
- The students are using StemScopes to explore and discover topics being taught.

Standard	Standard Description
8.1.P.C.1	Collaborate with peers by participating in interactive digital games or activities.
8.1.2.E.1	Use digital tools and online resources to explore a problem or issue.
8.2.2.B.2	Demonstrate how reusing a product affects the local and global environment.

Interdisciplinary Integration

Activities:

- The learner will conduct close readings and apply close reading strategies to better understand the content.

Resources:

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- 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/

July 2022

Standard	Standard Description
NJSLSA.R1	Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
RI.2.1	Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
RI.2.9	Compare and contrast the most important points presented by two texts on the same topic.
W.2.6	With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers
W.2.8	Recall information from experiences or gather information from provided sources to answer a question.
SL.2.2	Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.
MP.4	Model with mathematics.
2.NBT.A.3	Read and write numbers to 1000 using base-ten numerals, number names, and expanded form
2.MD.B.5	Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.

21st Century Life Skills	
Activities: ● The learner will participate in an exploration of jobs pertaining to geology.	
Standard	**Standard Description**
9.2.4.A.1	Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.

Careers	
Activities: ● The learner will participate in STEAM building activities that address the science content and apply critical thinking skills while persevering in solving the task at hand.	
Standard	**Standard Description**
CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.

Standards	

July 2022

Standard #	Standard Description	Student Learning Objectives	Statement Clarification
2-ESS2-3	Earth's Systems	Obtain information to identify where water is found on Earth and that it can be solid or liquid.	
2-ESS2-2	Earth's Systems	Develop a model to represent the shapes and kinds of land and bodies of water in an area.	[Assessment Boundary: Assessment does not include quantitative scaling in models.]
K-2-ETS1-1	**Engineering Design**	**Ask questions, make observations, and gather information about a situation people want to change (e.g., climate change) to define a simple problem that can be solved through the development of a new or improved object or tool.**	
K-2-ETS1-2	**Engineering Design**	**Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.**	
K-2-ETS1-3	**Engineering Design**	**Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.**	

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	• 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	• Tiered interventions following RTI framework • Effective RTI strategies for teachers - http://www.specialeducationguide.com/pre-k-12/respo	• Process should be modified: higher order thinking skills, open-ended thinking, discovery • Utilize project-based learning for greater depth of knowledge

• 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/	• Adapt a Strategy – Adjusting strategies for ESL students - http://www.teachersfirst.com/content/esl/adaptstrat.cfm	nse-to-intervention/effective-rti-strategies-for-teachers/ • 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: 2	Unit #: 5	Pacing: 8 weeks
Unit Title: Changes to Earth's Land			

OVERVIEW OF UNIT:

In this unit of study, students apply their understanding of the idea that wind and water can change the shape of land to compare design solutions to slow or prevent such change. The crosscutting concepts of *stability and change*; *structure and function*; 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 *asking questions and defining problems*, *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
• Some events happen very quickly; others occur very slowly over a time period much longer than one can observe. • Things may change slowly or rapidly. • Things may change slowly or rapidly. • Developing and using technology has impacts on the natural world. • Scientists study the natural and material world. • The shape and stability of structures of natural and designed objects are related to their function(s). • Wind and water can change the shape of the land. • Because there is always more than one possible solution to a problem, it is useful to compare and test designs.	• In what ways do humans slow or prevent wind or water from changing the shape of the land? • What evidence can we find to prove that Earth events can occur quickly or slowly? • In what ways do humans slow or prevent wind or water from changing the shape of the land?

● A situation that people want to change or create can be approached as a problem to be solved through engineering. ● Asking questions, making observations, and gathering information are helpful in thinking about problems. ● Before beginning to design a solution, it is important to clearly understand the problem. ● Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people.	

Objectives

- Students will be able to create ways that humans can slow or prevent wind or water from changing the shape of the land.
- Students can provide evidence to prove that Earth events can occur quickly or slowly.

Assessment

- Make observations from several sources to construct an evidence-based account for natural phenomena.
- Use information from several sources to provide evidence that Earth events can occur quickly or slowly. *(Assessment does not include quantitative measurements of timescales.)* Some examples of these events include:
  - ✓ Volcanic explosions
  - ✓ Earthquakes
  - ✓ Erosion of rocks.
- Compare multiple solutions to a problem.
- Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land. Examples of solutions could include:
  - ✓ Different designs of dikes and windbreaks to hold back wind and water
  - ✓ Different designs for using shrubs, grass, and trees to hold back the land.
- Ask questions based on observations to find more information about the natural and/or designed world.
- Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
- Define a simple problem that can be solved through the development of a new or improved object or tool.
- Develop a simple model based on evidence to represent a proposed object or tool.
- Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Formative Assessment:

- Group Discussions
- Peer work

Summative Assessment:

- Projects
- Published Writing

Benchmark:

- Access Prior Knowledge

Alternative:

- Modified Projects
- Modified Work

Key Vocabulary
Windbreaks, dikes, shrubs, solution, earthquakes, volcanic explosions, erosion, observations, engineering
Resources & Materials
https://www.nextgenscience.org

Technology Infusion

Teacher Technology:

- Smart Board
- Google Classroom
- StemScopes

Student Technology:

- Chromebooks
- StemScopes
- Seesaw

Activities:

- The students are using the chromebooks to reflect concepts learned using Seesaw.
- The students are using StemScopes to explore and discover topics being taught.

Standard	Standard Description
8.1.P.C.1	Collaborate with peers by participating in interactive digital games or activities.
8.1.2.E.1	Use digital tools and online resources to explore a problem or issue.
8.2.2.B.2	Demonstrate how reusing a product affects the local and global environment.

Interdisciplinary Integration

Activities:

- The learner will conduct close readings and apply close reading strategies 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
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RI.2.3	Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.
W.2.6	With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers

W.2.7	Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).
W.2.8	Recall information from experiences or gather information from provided sources to answer a question.
SL.2.2	Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.
MP.4	Model with mathematics.
2.NBT.A	Understand place value.

21st Century Life Skills	
Activities: ● The learner will participate in STEAM building activities that address the science content and apply critical thinking skills while persevering in solving the task at hand.	
Standard	**Standard Description**
CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.

Careers	
Activities: ● The learner will participate in an exploration of jobs pertaining to geology.	
Standard	**Standard Description**
9.2.4.A.1	Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals.

Standards			
Standard #	Standard Description	Student Learning Objectives	Statement Clarification
2-ESS1-1	Earth's Place in the Universe	Use information from several sources to provide evidence that Earth events can occur quickly or slowly.	Examples of events and timescales could include volcanic explosions and earthquakes, which happen quickly and erosion of rocks, which occurs slowly.] [Assessment Boundary: Assessment does

			not include quantitative measurements of timescales.]
2-ESS2-1	Earth's Systems	Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.	Examples of solutions could include different designs of dikes and windbreaks to hold back wind and water, and different designs for using shrubs, grass, and trees to hold back the land.
K-2-ETS 1-1	**Engineering Design**	**Ask questions, make observations, and gather information about a situation people want to change (e.g., climate change) to define a simple problem that can be solved through the development of a new or improved object or tool.**	
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