Englewood Public School District
Science
Grade 2
Fourth Marking Period

Unit 4: The Earth's Land and Water

Overview: 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.
This unit is based on 2-ESS2-3 and 2-ESS2-2.

Time Frame: 10 to 15 days

Enduring Understandings:
Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form.
Maps show where things are located. One can map the shapes and kinds of land and water in any area.

Essential Questions:
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?

Standards	Topics and Objectives	Activities	Resources	Assessments
2-ESS2-3 **Obtain information to identify where water is found on Earth and that it can be solid or liquid.** **2-ESS2-2:** **Develop a model to represent the shapes and kinds of land and bodies of water in an area.**	**Topics** Earth's Land and Water Twenty-First Century Themes and Skills include: Environmental Literacy • The Four C's • Environmental Literacy • Global Awareness **Objectives**	**Water on Earth:** Students will begin by investigating different states of water. Students will then give an example of water for each state of matter. Students then view a world map and evaluate the placements of snowmen and suns on the map in small groups. Students will then create two detailed drawings to show where water on earth can be found.	**Water on Earth** World Map Classroom Lesson Model Video **Models of Landforms and Bodies of Water:** **Download Resources:** • Models Presentation • Teachers Guide • Student Capture Sheet 1 • Student Capture Sheet 2	**Formative Assessments:** **Water on Earth:** Student drawings **The Earth is Mostly Water:** Student drawings **Benchmark Assessment:** Exact Path **Summative**

	Water on Earth: Students will identify where they can find water on earth and explain it through illustrations. **Models of Landforms and Bodies of Water:** Students will identify patterns that scientists use to classify landforms and bodies of water and create models of them. **Landforms Experts**: Students will choose a landform and write an information book on that form. **The Earth is Mostly Water**: Students will be able to identify several different bodies of water found on earth.	(2-ESS2-2, MP.2, 8.2.2.C.1, MP.4) **Models of Landforms and Bodies of Water:** Students begin by playing a game to review the types of characteristics of basic landforms and bodies of water. Next students will view different images of Earth from space and take notes on different landforms and bodies of water. Students will consider how scientists create and use models. Students then use different materials to create different landforms and bodies of water after studying different maps. Students do a gallery walk of the models and provide constructive feedback on the models of their peers. (9.2.4.A.1, W.2.8) **Landform Experts:** Students select a landform or body of water to research over a period time. Next students will complete guided research in class using teacher-selected resources. Students then write an informative brochure based on their research. (SL.2.5, 8.1.2.E.1, W.2.6, CPR.4, CPR.8) **The Earth Is Mostly Water**: Students will complete a TQL chart about the water found	• Region Maps TR1 • Landform Pictures TR2 **Materials:** • Models PP • Student Capture Sheet1 • StudentCaptureSheet2 • Pictures of landforms and bodies of water • Cups • Paper Mache paste/Play dough • Region maps TR **Landform Experts:** • Booklet Format • The Earth Is Mostly Water • TQL Chart • Talking Cubes Video **Video's:** https://jr.brainpop.com/science/land/landforms/ http://mocomi.com/landforms/ **Additional Texts:** https://www.readinga-z.com/books/leveled-books/book/?id=2007&lang=	**Assessments:** **Models of Landforms and Bodies of Water:** Student landform models **Landform Experts:** Student Booklet **Alternative Assessments:** Observe patterns in the natural world. Develop a model to represent patterns in the natural world. Checklists Observe patterns in the natural world. Science Journals Entry/Exit tickets 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. Pre/Post tests. Multiple choice questions Peer Review

		on Earth. In partners, students look through teacher provided resources to find commonalities between landforms and bodies of water. After conducting their research, landform groups are matched up with ocean groups. These groups know share their recent information. Students then create illustrations to represent the information they have learned. (CRP6, 6.1.P.D.3)	

Accommodations and Modifications:

Students with special needs: Support staff will be available to aid students related to IEP specifications. 504 accommodations will also be attended to by all instructional leaders. Physical expectations and modifications, alternative assessments, and scaffolding strategies will be used to support this learning. The use of Universal Design for Learning (UDL) will be considered for all students as teaching strategies are considered.

ELL/ESL students: Students will be supported according to the recommendations for "can do's" as outlined by WIDA – https://www.wida.us/standards/CAN_DOs/
This particular unit has limited language barriers due to the physical nature of the curriculum.

Students at risk of school failure: Formative and summative data will be used to monitor student success at first signs of failure student work will be reviewed to determine support. This may include parent consultation, basic skills review and differentiation strategies. With considerations to UDL, time may be a factor in overcoming developmental considerations. More time and will be made available with a certified instructor to aid students in reaching the standards.

Gifted and Talented Students: Students excelling in mastery of standards will be challenged with complex, high level challenges related to the Complexity in planning and carrying out investigations and analyzing and interpreting data.

English Language Learners	Special Education	At-Risk	Gifted and Talented
• Use project-based science learning to connect science with observable phenomena. • Speak and display terminology • Teacher modeling • Peer modeling • Provide ELL students with multiple literacy strategies. • Word walls • Use peer readers • Give page numbers to help the students find answers • Provide a computer for written work • Provide two sets of textbooks, one for home and one for school • Provide visual aides • Provide additional time to complete a task • Use graphic organizers	• Use project-based science learning to connect science with observable phenomena. • Utilize modifications & accommodations delineated in the student's IEP • Work with paraprofessional • Use multi-sensory teaching approaches. • Work with a partner • Provide concrete examples • Restructure lesson using UDL principals (http://www.cast.org/our-work/about-udl.html#.VXmoXcfD_UA). • Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling).	• Use project-based science learning to connect science with observable phenomena. • Using visual demonstrations, illustrations, and models • Give directions/instructions verbally and in simple written format. Oral prompts can be given. • Peer Support • Increase one on one time • Teachers may modify instructions by modeling what the student is expected to do • Instructions may be printed out in large print and hung up for the student to see during the time of the lesson. • Review behavior expectations and make adjustments for personal space or other behaviors as needed. • Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.	• Use project-based science learning to connect science with observable phenomena. • Curriculum compacting • Inquiry-based instruction • Independent study • Higher order thinking skills • Adjusting the pace of lessons • Interest based content • Real world scenarios • Student Driven Instruction • Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings. • Structure the learning around explaining or solving a social or community-based issue. • Collaborate with after-school programs or clubs to extend learning opportunities.

		• Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tool such as SKYPE, experts from the community helping with a project, journal articles, and biographies).	

Interdisciplinary Connections:

ELA - NJSLS/ELA:
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. (2-ESS2-3)
W.2.8: Recall information from experiences or gather information from provided sources to answer a question. (2-ESS2-3)
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. (2-ESS2-2)

Mathematics:
MP.2: Reason abstractly and quantitatively. (2-ESS2-2)
MP.4: Model with mathematics. (2-ESS2-2)

Social Studies:
6.1.4.B.9: Relate advances in science and technology to environmental concerns, and to actions taken to address them.

Career Ready Practices:
CRP6: Demonstrate creativity and innovation**.**
CRP4: Communicate clearly and effectively and with reason.
CRP8: Utilize critical thinking to make sense of problems and persevere in solving them.

Integration of Technology Standards NJSLS 8:
8.1.2.E.1: Use digital tools and online resources to explore a problem or issue.
8.2.2.C.1 Brainstorm ideas on how to solve a problem or build a product.

Integration of 21st Century Standards NJSLS 9:
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.

Key Vocabulary:
Map: A representation, usually on a flat surface, of an area or the features of an area.
Land: the solid part of the surface of the Earth
Water: the clear liquid that has no color, taste, or smell, that falls from clouds as rain, that forms streams, lakes, and seas.
Landforms: A shape or feature of the Earth's surface, like a delta or canyon.
Bodies of Water: the part of the earth's surface covered with water (such as a river or lake or ocean)

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Obtaining, Evaluating, and Communicating Information • 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. (2-ESS2-3) **Developing and Using Models** • Develop a model to represent patterns in the natural world. (2-ESS2-2)	**ESS2.C: The Roles of Water in Earth's Surface Processes** • Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form. (2-ESS2-3) **ESS2.B: Plate Tectonics and Large-Scale System Interactions** • Maps show where things are located. One can map the shapes and kinds of land and water in any area. (2-ESS2-2)	**Patterns** • Patterns in the natural world can be observed. (2-ESS2-2),(2-ESS2-3)

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Unit 5: Changes to Earth's Land

Overview: 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.
This unit is based on 2-ESS1-1, 2-ESS2-1, K-2-ETS1-1, and K-2-ETS1-2.

Time Frame: 15 to 20 days

Enduring Understandings:
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.
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.

Essential Questions:
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?

Standards	Topics and Objectives	Activities	Resources	Assessments
(2-ESS1-1) Use information from several sources to provide evidence that Earth events can	**Topics** Weathering and Erosion Engineering	**How Can Water Change the Shape of the Land?** The students experience water erosion in a hands-	**How Can Water Change the Shape of the Land?** • Tub of sand (each partner group needs only a vial-full, so you don't need much) • Vials (you could use any small container as an alternative, such as a film canister)--1 per partner group • Magnifying glasses--at least one per partner group	**Formative Assessments:** **How Can Wind Change the Shape of the Land?** Student worksheet

occur quickly or slowly. **(2-ESS2-1) Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.*** **(K-2-ETS1-1) 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.** **(K-2-ETS1-2) 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.**	Twenty-First Century Themes and Skills include: Environmental Literacy • The Four C's • Environmental Literacy • Global Awareness **Objectives** **How Can Water Change the Shape of the Land**? Students will observe and take notes on how water changes the land. **How Can Wind Change the Shape of the Land?** Students will take observational notes on the effects of wind erosion. **Finding Erosion at Our School:** Students will design and draw a diagram of an erosion control of their own. **Let's Build a Dam:** Students will work as a team to plan, design, construct and test a dam with	on investigation. Each student pair makes a sand tower and then observes it eroding as they drop water on the top of it. They take scientific notes on the process. To explain the erosion process they watch a short movie and then explain to their partner about erosion. (2-ESS1-1, CPR.4, W.2.7) **How Can Wind Change the Shape of the Land?** The students experience wind erosion in a hands-on investigation. The class will make a sand tower and then the students will take turns blowing through straws and observe the changes. They will take scientific notes on the process. To explain the erosion process they watch a short movie and then explain to their partner about erosion. (2-ESS2-1, W.2.8,	• Access to water or a pitcher of water • Eye dropper (as an alternative you could punch holes in the bottom of a cup; the idea is that you want something that will allow the water to flow gently)--1 per partner group • Plastic container/bin--1 per partner group; this will be used for each partner group to put their sand in • Erosion Water and Sand recording sheet--1 per student • Erosion book by Koontz or an alternative book explaining erosion • Lollipops--1 per student; optional, but it adds an element of fun! **How Can Water Change…Resources:** How Water Changes the Land resources **How Can Wind Change the Shape of the Land?** • Sand (enough to fill a Cool-Whip container) • Straws--1 per child • Plastic container/bin--1 per class • Erosion observation recording sheet--1 per student Video One Video Two Turn and Talk Partners **Finding Erosion at Our School**: Erosion Solution Worksheet Student Sample A Students Sample B **Let's Build a Dam:** **Materials:** Rocks (various sizes) Sticks (to act as logs) Sand or soil (I used sand...it was less messy and easier to clean afterwards) Small leaves Troughs to create the dam (I used paint troughs from the local	**Finding Erosion at Our School:** Erosion Solution Worksheet **Benchmark Assessment**: See Unit 4 for quarterly assessment **Summative Assessments:** **How Can Water Change the Shape of the Land?** Student experiment and notes **Let's Build a Dam:** Student Investigation Worksheet **Alternative Assessments:** Make observations from several sources to construct an evidence-based account for natural phenomena. Some examples of these events include: ✓ Volcanic explosions ✓ Earthquakes ✓ Erosion of rocks. Compare multiple solutions to a problem. Ask questions based on

	natural materials.	RI.2.3, RI.2.1, NJSLSA.R7) **Finding Erosion at Our School:** As a class, take a mini field trip on the school grounds to find evidence of erosion. As students identify evidence, the students will stop, observe and report. Discuss the types of erosion damage as a group what they have seen in their own neighborhood. Then we go back inside and create their own erosion solution for one of the problems we have witnessed. They will then share their ideas with the class. (NJSLSA.R2, MP4, 6.1.P.D.3, CRP8, 8.2.2.C.1) **Let's Build a Dam:** Students design and build a dam that will preserve water to feed a crop in chance of a drought. Students will work in small groups and create a	hardware store) Student Investigation Worksheet **Additional Texts:** https://www.sciencea-z.com/main/UnitResource/unit/65/openvideo/3445/earth-space-science/grades-5-6/changing-landforms#	observations to find more information about the natural and/or designed world. Define a simple problem that can be solved through the development of a new or improved object or tool. Students gather information about the types of landforms and bodies of water from experiences or from text and digital resources. They can use this information to answer questions. Students should use their research to publish a writing piece, with guidance and support from adults or collaboratively with peers, based on their findings about various landforms and bodies of water. Diagrams, drawings, photographs, audio or video recordings, poems, dioramas, models, or other visual displays can accompany students' writing to help recount experiences or clarify thoughts and ideas. Rubrics can be used for scoring.

		design of their dam. Students will then test their design a first time. Students will record their information and then will revise and attempt a second trial. (W.2.7, CRP6, 8.1.2.E.1, 9.2.4.A.3, 6.1.4.B.9)

Accommodations and Modifications:

Students with special needs: Support staff will be available to aid students related to IEP specifications. 504 accommodations will also be attended
to by all instructional leaders. Physical expectations and modifications, alternative assessments, and scaffolding strategies will be used to support
this learning. The use of Universal Design for Learning (UDL) will be considered for all students as teaching strategies are considered.

ELL/ESL students: Students will be supported according to the recommendations for "can do's" as outlined by WIDA – https://www.wida.us/standards/CAN_DOs/
This particular unit has limited language barriers due to the physical nature of the curriculum.

Students at risk of school failure: Formative and summative data will be used to monitor student success at first signs of failure student work will
be reviewed to determine support. This may include parent consultation, basic skills review and differentiation strategies. With considerations to
UDL, time may be a factor in overcoming developmental considerations. More time and will be made available with a certified instructor to aid students in reaching the standards.

Gifted and Talented Students: Students excelling in mastery of standards will be challenged with complex, high level challenges related to the Complexity in planning and carrying out investigations and analyzing and interpreting data.

English Language Learners	Special Education	At-Risk	Gifted and Talented
● Speak and display terminology ● Teacher modeling ● Peer modeling ● Provide ELL students with multiple literacy strategies. ● Word walls ● Use peer readers ● Give page numbers to help the students find answers ● Provide a computer for written work ● Provide two sets of textbooks, one for home and one for school ● Provide visual aides ● Provide additional time to complete a task ● Use graphic organizers	● Utilize modifications & accommodations delineated in the student's IEP ● Work with paraprofessional ● Use multi-sensory teaching approaches. ● Work with a partner ● Provide concrete examples ● Restructure lesson using UDL principals (http://www.cast.org/our-work/about-udl.html#.VXmoXcfD_UA). ● Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling).	● Using visual demonstrations, illustrations, and models ● Give directions/instructions verbally and in simple written format. Oral prompts can be given. ● Peer Support ● Increase one on one time ● Teachers may modify instructions by modeling what the student is expected to do ● Instructions may be printed out in large print and hung up for the student to see during the time of the lesson. ● Review behavior expectations and make adjustments for personal space or other behaviors as needed. ● Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. • Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tool such as SKYPE,	● Curriculum compacting ● Inquiry-based instruction ● Independent study ● Higher order thinking skills ● Adjusting the pace of lessons ● Interest based content ● Real world scenarios ● Student Driven Instruction ● Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings. ● Use project-based science learning to connect science with observable phenomena. ● Structure the learning around explaining or solving a social or community-based issue. ● Collaborate with after-school programs or clubs to extend extend learning opportu-nities.

		experts from the community helping with a project, journal articles, and biographies).	

Interdisciplinary Connections:

ELA - NJSLS/ELA:
NJSLSA.R2: Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
NJSLSA.R7: Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.
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. (2-ESS1-1), (K-2-ETS1-1)
RI.2.3: Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text. (2-ESS1-1)
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). (2-ESS1-1)
W.2.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.

Mathematics:
MP.4 Model with mathematics.
MP.5 Use appropriate tools strategically.

Social Studies:
6.1.4.B.9: Relate advances in science and technology to environmental concerns, and to actions taken to address them.

Career Ready Practices:
CRP6: Demonstrate creativity and innovation.
CRP4: Communicate clearly and effectively and with reason.
CRP8: Utilize critical thinking to make sense of problems and persevere in solving them.

Integration of Technology Standards NJSLS 8:
8.1.2.E.1: Use digital tools and online resources to explore a problem or issue.
8.2.2.C.1 Brainstorm ideas on how to solve a problem or build a product.

Integration of 21st Century Standards NJSLS 9:
9.2.4.A.3: Investigate both traditional and nontraditional careers and related information to personal likes and dislikes.

Key Vocabulary:
Volcanoes: is a vent, or opening, in Earth's surface through which molten rock, gases, and ash erupt
Earthquakes: the shaking, rolling or sudden shock of the earth's surface
Erosion: The breakdown and removal of soil and rock by water, wind, or other forces
Weathering: takes place as rocks are broken down into progressively smaller pieces by the effects of weather.

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Constructing Explanations and Designing Solutions • Make observations from several sources to construct an evidence-based account for natural phenomena. (2-ESS1-1) • Compare multiple solutions to a problem. (2-ESS2-1) **Asking Questions and Defining Problems** • Ask questions based on observations to find more information about the natural and/or designed world(s). (K-2-ETS1-1)	**ESS1.C: The History of Planet Earth** • Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. (2-ESS1-1) **ESS2.A: Earth Materials and Systems** • Wind and water can change the shape of the land. (2-ESS2-1) **ETS1.A: Defining and Delimiting Engineering Problems** • A situation that people want to change or create can be	**Stability and Change** • Things may change slowly or rapidly. (2-ESS1-1) • Things may change slowly or rapidly. (2-ESS2-1) **Structure and Function** • The shape and stability of structures of natural and designed objects are related to their function(s). (K-2-ETS1-2)

• Define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1) **Developing and Using Models** • Develop a simple model based on evidence to represent a proposed object or tool. (K-2-ETS1-2)	approached as a problem to be solved through engineering. (K-2-ETS1-1) • Asking questions, making observations, and gathering information are helpful in thinking about problems. (K-2-ETS1-1) • Before beginning to design a solution, it is important to clearly understand the problem. (K-2-ETS1-1) **ETS1.B: Developing Possible Solutions** • 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. (K-2-ETS1-2)	- ***Connections to Engineering, Technology, and Applications of Science*** **Influence of Engineering, Technology, and Science on Society and the Natural World** • Developing and using technology has impacts on the natural world. (2-ESS2-1) - ***Connections to Nature of Science*** **Science Addresses Questions About the Natural and Material World** • Scientists study the natural and material world. (2-ESS2-1)