Eagleswood Township Elementary School District
Science Curriculum
Grade 2

Revised December 2020
BOE Approved January 2021

Pacing Guide

Unit	Anticipated Timeframe
Unit 1: Structure and Properties of Matter	45 Days
Unit 2: Interdependent Relationships in Ecosystems	45 Days
Unit 3: Earth's Systems: Processes that Shape the Earth	45 Days
Unit 4: Engineering and Design	45 Days

Core Materials:
Studies Weekly
Houghton Mifflin Harcourt Science Dimensions

Correlation Key		
Holocaust	Amistad	Financial Literacy

Career Readiness, Life Literacies, and Key Skills Practices	
Act as a responsible and contributing community members and employee.	Students understand the obligations and responsibilities of being a member of a community, and they demonstrate this understanding every day through their interactions with others. They are conscientious of the impacts of their decisions on others and the environment around them. They think about the near-term and long-term consequences of their actions and seek to act in ways that contribute to the betterment of their teams, families, community and workplace. They are reliable and consistent in going beyond the minimum expectation and in participating in activities that serve the greater good.
Consider the environmental, social and economic impacts of decisions.	Students understand the interrelated nature of their actions and regularly make decisions that positively impact and/or mitigate negative impact on other people, organization, and the environment. They are aware of and utilize new technologies, understandings, procedures, materials, and regulations affecting the nature of their work as it relates to the impact on the social condition, the environment and the profitability of the organization.
Demonstrate creativity and innovation.	Students regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization. They can consider unconventional ideas and suggestions as solutions to issues, tasks or problems, and they discern which ideas and suggestions will add greatest value. They seek new methods, practices, and ideas from a variety of sources and seek to apply those ideas to their own workplace. They take action on their ideas and understand how to bring innovation to an organization.

Utilize critical thinking to make sense of problems and persevere in solving them.	Students readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem. They are aware of problems when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. They carefully consider the options to solve the problem. Once a solution is agreed upon, they follow through to ensure the problem is solved, whether through their own actions or the actions of others.
Model integrity, ethical leadership and effective management.	Students consistently act in ways that align personal and community-held ideals and principles while employing strategies to positively influence others in the workplace. They have a clear understanding of integrity and act on this understanding in every decision. They use a variety of means to positively impact the directions and actions of a team or organization, and they apply insights into human behavior to change others' action, attitudes and/or beliefs. They recognize the near-term and long-term effects that management's actions and attitudes can have on productivity, morals and organizational culture.
Plan education and career paths aligned to personal goals.	Students take personal ownership of their own education and career goals, and they regularly act on a plan to attain these goals. They understand their own career interests, preferences, goals, and requirements. They have perspective regarding the pathways available to them and the time, effort, experience and other requirements to pursue each, including a path of entrepreneurship. They recognize the value of each step in the education and experiential process, and they recognize that nearly all career paths require ongoing education and experience. They seek counselors, mentors, and other experts to assist in the planning and execution of career and personal goals.

Use technology to enhance productivity, increase collaboration and communicate effectively.	Students find and maximize the productive value of existing and new technology to accomplish workplace tasks and solve workplace problems. They are flexible and adaptive in acquiring new technology. They are proficient with ubiquitous technology applications. They understand the inherent risks-personal and organizational-of technology applications, and they take actions to prevent or mitigate these risks.
Work productively in teams while using cultural/global competence.	Students positively contribute to every team, whether formal or informal. They apply an awareness of cultural differences to avoid barriers to productive and positive interaction. They find ways to increase the engagement and contribution of all team members. They plan and facilitate effective team meetings.

Career Readiness, Life Literacies, and Key Skills Core Ideas
The following units will incorporate the following Career Readiness, Life Literacies, and Key Skills core ideas: ● There are ways to keep the things we value safely at home and other places. ● There are actions an individual can take to help make this world a better place ● Different types of jobs require different knowledge and skills. ● Brainstorming can create new, innovative ideas ● Critical thinkers must first identify a problem then develop a plan to address it to effectively solve the problem. ● Digital artifacts can be owned by individuals or organizations. ● Digital tools and media resources provide access to vast stores of information that can be searched. ● Digital tools can be used to display data in various ways. ● Digital tools have a purpose. ● Collaboration can simplify the work an individual has to do and sometimes produce a better product
Standard 8.1 Computer Science Core Ideas

This Unit will include incorporate the following core ideas.

- Individuals use computing devices to perform a variety of tasks accurately and quickly. Computing devices interpret and follow the instructions they are given literally.
- Describing a problem is the first step toward finding a solution when computing systems do not work as expected.
- Individuals collect, use, and display data about individuals and the world around them.
- Individuals can select, organize, and transform data into different visual representations and communicate insights gained from the data.
- Data can be organized, displayed, and presented to highlight relationships.
- Data can be used to make predictions about the world.

Standard 8.2 Design Thinking Core Ideas

This Unit will incorporate the following core ideas.

- Engineering design is a creative process for meeting human needs or wants that can result in multiple solutions.
- Limitations (constraints) must be considered when engineering designs.
- Human needs and desires determine which new tools are developed.
- Technology has changed the way people live and work.
- Various tools can improve daily tasks and quality of life.
- The use of technology developed for the human designed world can affect the environment, including land, water, air, plants, and animals.
- Technologies that use natural sources can have negative effects on the environment, its quality, and inhabitants.
- Reusing and recycling materials can save money while preserving natural resources and avoiding damage to the environment.
- The availability of technology for essential tasks varies in different parts of the world.

Unit 1: Structure and Properties of Matter	Duration: September, October, November
Standards	
2-PS1-1 Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	

2-PS1-2 Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

2-PS1-3 Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs. 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.

2-PS1-4 Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot

Interdisciplinary Skills

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.2.4- Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.

RI.2.5- Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently.

RI.2.6- Identify the main purpose of a text, including what the author wants to answer, explain, or describe.

RI.2.7- Explain how specific illustrations and images (e.g., a diagram showing how a machine works) contribute to and clarify a text.

RI.2.10- Read and comprehend informational texts, including history/social studies, science, and technical texts, at grade level text complexity proficiently with scaffolding as needed.

L.2.4- Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 2 reading and content, choosing flexibly from an array of strategies

L.2.6- Use words and phrases acquired through conversations, reading and being read to, and responding to texts, including using adjectives and adverbs to describe (e.g., When other kids are happy that makes me happy).

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 conclusion.

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.2.1- Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.

SL.2.1.A- Follow agreed-upon norms for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).
SL.2.1.B- Build on others' talk in conversations by linking their explicit comments to the remarks of others.
SL.2.2- Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.
MP.1- Make sense of problems and persevere in solving them.
MP.2- Reason abstractly and quantitatively.
MP.3- Construct viable arguments and critique the reasoning of others.
MP.4- Model with mathematics.
MP.5- Use appropriate tools strategically.
MP.6- Attend to precision.
MP.7- Look for and make use of structure.
2.OA.1- Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
2.MD.4- Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

Career Readiness, Life Literacies, and Key Skills

9.1.2.RM.1: Describe how valuable items might be damaged or lost and ways to protect them.
9.1.2.CAP.1: Make a list of different types of jobs and describe the skills associated with each job.
9.1.2.CAP.3: Define entrepreneurship and social entrepreneurship.
9.4.2.CT.1: Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem (e.g., K-2-ETS1-1, 6.3.2.GeoGI.2).
9.4.2.CT.2: Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3).
9.4.2.CT.3: Use a variety of types of thinking to solve problems (e.g., inductive, deductive)
9.4.2.TL.6: Illustrate and communicate ideas and stories using multiple digital tools (e.g., SL.2.5.).
9.4.2.CI.1: Demonstrate openness to new ideas and perspectives (e.g., 1.1.2.CR1a, 2.1.2.EH.1, 6.1.2.CivicsCM.2).
9.4.2.CI.2: Demonstrate originality and inventiveness in work (e.g., 1.3A.2CR1a).

Computer Science and Design Thinking

8.1.2.DA.1: Collect and present data, including climate change data, in various visual formats.
8.1.2.DA.3: Identify and describe patterns in data visualizations.
8.1.2.DA.4: Make predictions based on data using charts or graphs.
8.1.2.CS.1: Select and operate computing devices that perform a variety of tasks accurately and quickly based on user needs and preferences.

8.2.2.ITH.1: Identify products that are designed to meet human wants or needs.
8.2.2.ITH.3: Identify how technology impacts or improves life.
8.2.2.ITH.5: Design a solution to a problem affecting the community in a collaborative team and explain the intended impact of the solution.

Essential Understandings	Essential Questions
Students will understand that… ● Matter exists as different substances that have various observable properties. ● Properties such as strength, flexibility, hardness, texture, and absorbency determine the purpose of matter. ● Objects may break into smaller pieces and be put together into larger pieces, or change shapes. ● Some materials experience permanent changes when heated or cooled, while others have changes that are reversible.	● How can you describe and classify different kinds of materials? ● Which properties of different materials make them suitable for select functions? ● How can an object made of a small set of pieces be disassembled and made into a new object? ● How does heating and cooling change matter?

Evidence of Student Learning

Performance Tasks: *Activities to provide evidence for student learning of content and cognitive skills.*	Other Assessments
Building Structures: Work together to brainstorm a list of possible structures that could be built with different materials. For example, students can build bridges or houses. Select one structure from the list and determine the intended purpose of that structure. Select two or three different materials that can be used to build the structure. Investigate the physical properties of the materials, including shape, strength, flexibility, hardness, texture, or absorbency.	**Formative Assessments** ● Graphic Organizers & Guided Note Taking ● Directed Reading ● Cooperative Group Learning ● Homework ● Journal Entries ● Teacher Observation

Collect and analyze data to determine whether or not the given materials have properties that are suited for the intended purpose of the selected structure. In groups, students will use one of the materials to build the structure. (Teachers should have different groups use different types of materials) Test and compare how each structure performs. It is useful to compare the strengths and weaknesses of each structure and material used.	**Summative Assessments** ● RST- Research Simulation Task ● Associated Unit tests, quizzes ● Labs and engineering based projects ● Benchmark **Benchmark Assessment** ● Science A-Z Benchmark Assessment **Alternative Assessments** ● Group Work/Class Discussion Rubric ● Guided Observations ● Questions Starters ● Participation Rubric ● Modified Tests/Quizzes/Classwork ● Science A-Z Activities ● Science Related Reading A-Z Activities ● Mystery Science Activities ● Fundamentals Unlimited Books and Assessments

Vocabulary
solid, matter, States of matter, plasma, gas, liquid, temperature, heat, energy, condensation, melting, freezing, chemical symbol, kinetic energy, vaporization, physical change, chemical change, sublimation, melting point, chemical property, element, boiling point, physical properties, atom, mass, mixture, nucleus, property, molecule, solution, volume, freezing point and vapor

Knowledge and Skills

Content	Skills
Students will know… ● 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 ● different properties are suited to different purposes ● a great variety of objects can be built up from a small set of pieces ● heating or cooling a substance may cause changes that can be observed (sometimes these changes are reversible, and sometimes they are not)	*Students will be able to …* ● Plan and conduct an investigation collaboratively to produce describe and classify different kinds of materials by their observed properties. ● Analyze data from tests of an object or tool to determine if it works as intended. ● Make observations (firsthand or from media) to construct an evidence-based account of how an object made of a small set of pieces can be assembled. ● Construct an argument with evidence that some change caused by heating or cooling can be reversed and some cannot. ● Search for cause and effect relationships to explain natural events.
Instructional Plan	
Suggested Activities	**Resources**
Why do we wear clothes? Students explore the different properties of materials used for clothing. In the activity, students select materials they need to construct a hat that protects them from the sun. How does availability of material affect cost?	https://mysteryscience.com/materials/mystery-1/material-properties-engineering/64?r=6359979

Can you really fry an egg on a hot sidewalk? Students consider the insulating and conducting properties of different materials. In the activity, students test different materials to determine which material is best for making oven mitts.	https://mysteryscience.com/materials/mystery-2/material-properties-classifying-materials/65?r=6359979
Why are so many toys made out of plastic? Students learn about melting and the solid & liquid states of matter, then discover why plastic was invented. In the activity, students test the "meltable" property of candy.	https://mysteryscience.com/materials/mystery-3/material-changes-phases-of-matter/66?r=6359979
What materials might be invented in the future? Students learn how new materials are invented. In the activity, they create a design for an invention that uses a futuristic material.	https://mysteryscience.com/materials/mystery-4/material-inventions-engineering/67?r=6359979

Literature
● <u>What is the World Made of?</u> By Kathleen Weidner Zoehfeld and Paul Meisel ● <u>Solids, Liquids, and Gases</u> by Ginger Garrett ● <u>Many Kinds of Matter</u>: A Look at Solids, Liquids, and Gases by Jennifer Boothroyd ● <u>It Does Matter!: Different States of Matter</u> by Baby Professor ● **Benno and the Night of Broken Glass by Meg Wiviott**

Websites	
Activities related to every unit of science for grade two.	www.betterlesson.com
Science website with various second grade science activities. This website requires membership.	The Happy Scientist
Science website with various second grade science activities.	Hooked On Science

Earth science related activities.	[Earth Sci Week](#)
Brainpop video on matter	[Brainpop video](#)

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Suggested Options for Differentiation

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English Language Learners:
- Provide ELL students with multiple literacy strategies
- Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community
- Provide extra time
- Pre-teach vocabulary using visuals and gestures
- Chunk texts
- Summarize as you go
- Preview lessons
- Graphic Organizers
- Highlight key words
- Sentence starters
- Prompting and cuing
- Activate schema
- Build background knowledge

Basic Skills/Economically Disadvantaged:
- Pre-teach vocabulary using visuals and gestures
- Chunk texts
- Summarize as you go
- Preview lessons
- Graphic organizers
- Highlight keywords
- Sentence Starters
- Prompting and cuing
- Activate schema
- Build background knowledge

Gifted and Talented:
- Higher level questioning
- Students design questions
- Choice board to extend learning
- Expose to sophisticated vocabulary
- Extend reading response to further enrich understanding (see extension activities in unit binder)
- Discuss how readers and writers connect
- Create comic strip showing connections to reading lives: illustrate and caption
- Create poem using rich adjectives and detailed illustrations
- Write paragraph in notebook about things they are passionate about
- Have students choose someone in their family they would write a biography about and why
- Collect artifacts to decorate notebook at home-discuss with class
- Have students create a poster showing their favorite reading spot
- Have students create anchor charts to explain strategy taught to hand around the room
- Students can expand on discussions with family members in their notebooks
- Expand reading genre while independent reading to reflect a well-rounded book bag

Special Education
- Follow all IEP modifications
- Teacher tutoring
- Peer tutoring
- Cooperative learning groups
- Modified assignments
- Differentiated instruction
- Listen to audio recordings instead of reading text
- Learn content from audio books, movies, videos and digital media instead of reading print versions
- Work with fewer items per page or line and/or materials in a larger print size
- Have a designated reader
- Hear instructions orally
- Record a lesson, instead of taking note
- Have another student share class notes with him
- Be given an outline of a lesson

● Use visual presentations of verbal material, such as word webs and visual organizers ● Be given a written list of instruction
504 ● Follow 504 plan ● Modify the amount of homework ● Use written directions to supplement oral directions ● Reduce paper and pencil tasks ● Review concepts and important vocabulary from previous lessons before teaching new information ● Check for student understanding often with formal, informal, verbal, and nonverbal measures ● Progress Monitoring ● Model and reinforce organizational systems ● Small group instruction
Modifications/Accommodations
Response accommodations allow a student to: ● Give responses in a form (oral or written) that's easier for him ● Dictate answers to a scribe ● Capture responses on an audio recorder ● Use a spelling dictionary or electronic spell-checker ● Use a word processor to type notes or give responses in class ● Use a calculator or table of "math facts" **Setting accommodations allow a student to:** ● Work or take a test in a different setting, such as a quiet room with few distractions ● Sit where he learns best (for example, near the teacher) ● Use special lighting or acoustics ● Take a test in small group setting ● Use sensory tools such as an exercise band that can be looped around a chair's legs (so fidgety kids can kick it and quietly get their energy out) **Timing accommodations allow a student to:** ● Take more time to complete a task or a test ● Have extra time to process oral information and directions

- Take frequent breaks, such as after completing a task

Scheduling accommodations allow a student to:
- Take more time to complete a project
- Take a test in several timed sessions or over several days
- Take sections of a test in a different order
- Take a test at a specific time of day

Organization skills accommodations allow a student to:
- Use an alarm to help with time management
- Mark texts with a highlighter
- Have help coordinating assignments in a book or planner
- Receive study skills instruction

Assignment modifications allow a student to:
- Complete fewer or different homework problems than peers
- Write shorter papers
- Answer fewer or different test questions
- Create alternate projects or assignments

Curriculum modifications allow a student to:
- Learn different material (such as continuing to work on multiplication while classmates move on to fractions)
- Get graded or assessed using a different standard than the one for classmates

	Correlation Key	
Holocaust	Amistad	Financial Literacy

Career Readiness, Life Literacies, and Key Skills Practices	
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Work productively in teams while using cultural/global competence.	Students positively contribute to every team, whether formal or informal. They apply an awareness of cultural differences to avoid barriers to productive and positive interaction. They find ways to increase the engagement and contribution of all team members. They plan and facilitate effective team meetings.

Unit 2: Interdependent Relationships in Ecosystems	Duration: December, January, February

Standards

2-LS2-1 Plan and conduct an investigation to determine if plants need sunlight and water to grow.
2-LS2-2 Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.
2-LS4-1 Make observations of plants and animals to compare the diversity of life in different habitats.
Interdisciplinary Skills
SL.2.1.A Follow agreed-upon norms for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).
SL.2.1.B Build on others' talk in conversations by linking their explicit comments to the remarks of others.
SL.2.1.C Ask for clarification and further explanation as needed about the topics and texts under discussion.
Career Readiness, Life Literacies, and Key Skills
9.1.2.RM.1: Describe how valuable items might be damaged or lost and ways to protect them.
9.1.2.CAP.1: Make a list of different types of jobs and describe the skills associated with each job.

9.1.2.CAP.3: Define entrepreneurship and social entrepreneurship.
9.4.2.CT.1: Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem (e.g., K-2-ETS1-1, 6.3.2.GeoGI.2).
 9.4.2.CT.2: Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3).
9.4.2.CT.3: Use a variety of types of thinking to solve problems (e.g., inductive, deductive)
9.4.2.TL.6: Illustrate and communicate ideas and stories using multiple digital tools (e.g., SL.2.5.).
9.4.2.CI.1: Demonstrate openness to new ideas and perspectives (e.g., 1.1.2.CR1a, 2.1.2.EH.1, 6.1.2.CivicsCM.2).
9.4.2.CI.2: Demonstrate originality and inventiveness in work (e.g., 1.3A.2CR1a).

Computer Science and Design Thinking

8.1.2.DA.1: Collect and present data, including climate change data, in various visual formats.
8.1.2.DA.3: Identify and describe patterns in data visualizations.
8.1.2.DA.4: Make predictions based on data using charts or graphs.
8.1.2.CS.1: Select and operate computing devices that perform a variety of tasks accurately and quickly based on user needs and preferences.
8.2.2.ITH.1: Identify products that are designed to meet human wants or needs.
8.2.2.ITH.3: Identify how technology impacts or improves life.
8.2.2.ITH.5: Design a solution to a problem affecting the community in a collaborative team and explain the intended impact of the solution.

Essential Understandings	Essential Questions
Students will understand that… ● Plants need water and light. ● Seed dispersal and pollination of plants occur when animals eat and travel to various areas. ● Diversity is dependent on availability of life sustaining resources.	● Do plants and animals need sunlight and water to grow? ● What are the steps that occur when animals help disperse seeds or aid in pollinating plants? ● What are observations that can be made about the diversity of living things in different habitats?

Evidence of Student Learning	
Performance Tasks: *Activities to provide evidence for student learning of content and cognitive skills.*	**Other Assessments**
Plant Investigations Based on a given plan for the investigation, students describe the following evidence to be collected: ○ Descriptions based on observations (firsthand or from media) of habitats, including land habitats (e.g., playground, garden, forest, parking lot) and water habitats (e.g., pond, stream, lake). ○ Descriptions based on observations (firsthand or from media of different types of living things in each habitat (e.g., trees, grasses, flowering plants, lizards, squirrels, ants, fish, clams). ○ Comparisons of the different types of living things that can be found in different habitats. Students develop a simple model that mimics the function of an animal I seed dispersal or pollination of plants. Students identify the relevant components of their model, including those components that mimic the natural structure of an animal that helps it disperse seeds (e.g., hair that snares seeds, squirrel cheek pouches that transport seeds) or that mimic the natural structure of an animal that helps it pollinate plants (e.g., bees have fuzzy bodies to which pollen sticks, hummingbirds have bills that transport pollen). The relevant components of the model include:	**Formative Assessments** ● Graphic Organizers & Guided Note Taking ● Directed Reading ● Cooperative Group Learning ● Homework ● Journal Entries ● Teacher Observation **Summative Assessments** ● RST- Research Simulation Task ● Associated Unit tests, quizzes ● Labs and engineering based projects **Benchmark Assessment** ● Science A-Z Benchmark Assessment **Alternative Assessments** ● Group Work/Class Discussion Rubric ● Guided Observations ● Questions Starters ● Participation Rubric ● Modified Tests/Quizzes/Classwork ● Science A-Z Activities

relevant structures of the animal, relevant structures of the plant, pollen or seeds from plants. In the model, students describe relationships between components, including evidence that the developed model mimics how plant and animal structures interact to move pollen or disperse seeds. Students describe the relationships between components that allow for movement of pollen or seeds. Students describe the relationships between the parts of the model they are developing and the parts of the animal they are mimicking. Students use the model to describe how the structure of the model gives rise to the function, and how the structure-function relationships in the natural world that allow some animals to disperse seeds or pollinate plants.	● Science Related Reading A-Z Activities ● Mystery Science Activities ● Fundamentals Unlimited Books and Assessments

Vocabulary
Ecosystems, habitat, producer, consumer, climate, food chain, environment, organism, prey, predator, scavenger, pollutant, seed dispersal, pollination, primary consumer, secondary consumer

Knowledge and Skills

Content	**Skills**
Students will know… ● Plants depend on water and light to grow. ● plants depend on animals for pollination or to move their seeds around ● there are many different kinds of living things in any area, and they exist in different places on land and in water	*Students will be able to …* ● Make observations to compare the diversity of plants and animals in different habitats. ● Develop a simple model that mimics the function of an animal dispersing seeds or pollinating plants.

	● Plan and conduct an investigation to determine if plants need sunlight and water to grow.
Instructional Plan	
Suggested Activities	**Resources**
How did a tree travel halfway around the world? Students will learn how seeds must get away from their parent plant in order to survive.	https://mysteryscience.com/plants/structure-function-adaptations?r=6359979#plants-1.0
Do plants eat dirt? Students will learn the importance of water (which is taken in by the roots) for plants, and what it is about dirt that plants really need. They'll build a Root Viewer to see up close how roots behave	https://mysteryscience.com/plants/mystery-2/roots-water-minerals/85?r=6359979
Why do trees grow so tall? Students will learn the importance of sunlight to plants, which is collected by their leaves. Knowing how plants respond to sunlight, they will build creative Grass Heads. This mystery requires two class periods.	https://mysteryscience.com/plants/mystery-3/light-leaves-competition/86?r=6359979
Should you water a cactus? Students will learn that plants have different needs in terms of sunlight and water. In the activity we will revisit our Grass Heads.	https://mysteryscience.com/plants/mystery-4/adaptations-habitat/87?r=6359979
Where do plants grow best? Students will practice thinking like gardeners.	https://mysteryscience.com/plants/mystery-5/adaptations-habitat/88?r=6359979
Literature	

● <u>Trees</u> by Gail Gibbons ● <u>Plants and Tree Ecosystems! From Wetlands to Forests</u> by Left Brain Kids ● <u>Many Biomes, One Earth</u> by Sneed B. Collard III and James M. Needham ● <u>Tree of Life: The Incredible Biodiversity of Life on Earth</u> by Rochelle Strauss and Margot Thompson	
Websites	
Activities related to every unit of science for grade two.	www.betterlesson.com
Science website with various second grade science activities. This website requires membership.	The Happy Scientist
Science website with various second grade science activities.	Hooked On Science
Earth science related activities.	Earth Sci Week
Brainpop video on matter	Brainpop video
Differentiated Instruction	

English Language Learners:
- Provide ELL students with multiple literacy strategies
- Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community
- Provide extra time
- Pre-teach vocabulary using visuals and gestures
- Chunk texts
- Summarize as you go
- Preview lessons
- Graphic Organizers
- Highlight key words
- Sentence starters

- Prompting and cuing
- Activate schema
- Build background knowledge

Basic Skills/Economically Disadvantaged:
- Pre-teach vocabulary using visuals and gestures
- Chunk texts
- Summarize as you go
- Preview lessons
- Graphic organizers
- Highlight keywords
- Sentence Starters
- Prompting and cuing
- Activate schema
- Build background knowledge

Gifted and Talented:
- Higher level questioning
- Students design questions
- Choice board to extend learning
- Expose to sophisticated vocabulary
- Extend reading response to further enrich understanding (see extension activities in unit binder)
- Discuss how readers and writers connect
- Create comic strip showing connections to reading lives: illustrate and caption
- Create poem using rich adjectives and detailed illustrations
- Write paragraph in notebook about things they are passionate about
- Have students choose someone in their family they would write a biography about and why
- Collect artifacts to decorate notebook at home-discuss with class
- Have students create a poster showing their favorite reading spot
- Have students create anchor charts to explain strategy taught to hand around the room
- Students can expand on discussions with family members in their notebooks
- Expand reading genre while independent reading to reflect a well-rounded book bag

Special Education
- Follow all IEP modifications/504 plan

- Teacher tutoring
- Peer tutoring
- Cooperative learning groups
- Modified assignments
- Differentiated instruction
- Listen to audio recordings instead of reading text
- Learn content from audio books, movies, videos and digital media instead of reading print versions
- Work with fewer items per page or line and/or materials in a larger print size
- Have a designated reader
- Hear instructions orally
- Record a lesson, instead of taking note
- Have another student share class notes with him

- Be given an outline of a lesson
- Use visual presentations of verbal material, such as word webs and visual organizers
- Be given a written list of instruction

504
- Follow 504 plan
- Modify the amount of homework
- Use written directions to supplement oral directions
- Reduce paper and pencil tasks
- Review concepts and important vocabulary from previous lessons before teaching new information
- Check for student understanding often with formal, informal, verbal, and nonverbal measures
- Progress Monitoring
- Model and reinforce organizational systems
- Small group instruction

Modifications/Accommodations

Response accommodations allow a student to:
- Give responses in a form (oral or written) that's easier for him
- Dictate answers to a scribe
- Capture responses on an audio recorder
- Use a spelling dictionary or electronic spell-checker
- Use a word processor to type notes or give responses in class

- Use a calculator or table of "math facts"

Setting accommodations allow a student to:
- Work or take a test in a different setting, such as a quiet room with few distractions
- Sit where he learns best (for example, near the teacher)
- Use special lighting or acoustics
- Take a test in small group setting
- Use sensory tools such as an exercise band that can be looped around a chair's legs (so fidgety kids can kick it and quietly get their energy out)

Timing accommodations allow a student to:
- Take more time to complete a task or a test
- Have extra time to process oral information and directions
- Take frequent breaks, such as after completing a task

Scheduling accommodations allow a student to:
- Take more time to complete a project
- Take a test in several timed sessions or over several days
- Take sections of a test in a different order
- Take a test at a specific time of day

Organization skills accommodations allow a student to:
- Use an alarm to help with time management
- Mark texts with a highlighter
- Have help coordinating assignments in a book or planner
- Receive study skills instruction

Assignment modifications allow a student to:
- Complete fewer or different homework problems than peers
- Write shorter papers
- Answer fewer or different test questions
- Create alternate projects or assignments

Curriculum modifications allow a student to:
● Learn different material (such as continuing to work on multiplication while classmates move on to fractions)
● Get graded or assessed using a different standard than the one for classmates

	Correlation Key	
Holocaust	Amistad	Financial Literacy

Career Readiness, Life Literacies, and Key Skills Practices	
Act as a responsible and contributing community members and employee.	Students understand the obligations and responsibilities of being a member of a community, and they demonstrate this understanding every day through their interactions with others. They are conscientious of the impacts of their decisions on others and the environment around them. They think about the near-term and long-term consequences of their actions and seek to act in ways that contribute to the betterment of their teams, families, community and workplace. They are reliable and consistent in going beyond the minimum expectation and in participating in activities that serve the greater good.
Consider the environmental, social and economic impacts of decisions.	Students understand the interrelated nature of their actions and regularly make decisions that positively impact and/or mitigate negative impact on other people, organization, and the environment. They are aware of and utilize new technologies, understandings, procedures, materials, and regulations affecting the nature of their work as it relates to the impact on the social condition, the environment and the profitability of the organization.

Demonstrate creativity and innovation.	Students regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization. They can consider unconventional ideas and suggestions as solutions to issues, tasks or problems, and they discern which ideas and suggestions will add greatest value. They seek new methods, practices, and ideas from a variety of sources and seek to apply those ideas to their own workplace. They take action on their ideas and understand how to bring innovation to an organization.
Utilize critical thinking to make sense of problems and persevere in solving them.	Students readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem. They are aware of problems when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. They carefully consider the options to solve the problem. Once a solution is agreed upon, they follow through to ensure the problem is solved, whether through their own actions or the actions of others.
Model integrity, ethical leadership and effective management.	Students consistently act in ways that align personal and community-held ideals and principles while employing strategies to positively influence others in the workplace. They have a clear understanding of integrity and act on this understanding in every decision. They use a variety of means to positively impact the directions and actions of a team or organization, and they apply insights into human behavior to change others' action, attitudes and/or beliefs. They recognize the near-term and long-term effects that management's actions and attitudes can have on productivity, morals and organizational culture.

Plan education and career paths aligned to personal goals.	Students take personal ownership of their own education and career goals, and they regularly act on a plan to attain these goals. They understand their own career interests, preferences, goals, and requirements. They have perspective regarding the pathways available to them and the time, effort, experience and other requirements to pursue each, including a path of entrepreneurship. They recognize the value of each step in the education and experiential process, and they recognize that nearly all career paths require ongoing education and experience. They seek counselors, mentors, and other experts to assist in the planning and execution of career and personal goals.
Use technology to enhance productivity, increase collaboration and communicate effectively.	Students find and maximize the productive value of existing and new technology to accomplish workplace tasks and solve workplace problems. They are flexible and adaptive in acquiring new technology. They are proficient with ubiquitous technology applications. They understand the inherent risks-personal and organizational-of technology applications, and they take actions to prevent or mitigate these risks.
Work productively in teams while using cultural/global competence.	Students positively contribute to every team, whether formal or informal. They apply an awareness of cultural differences to avoid barriers to productive and positive interaction. They find ways to increase the engagement and contribution of all team members. They plan and facilitate effective team meetings.

Unit 3: Earth's Systems: Processes that Shape the Earth	Duration: March, April. May, June
Standards	
2-ESS1-1 Use information from several sources to provide evidence that Earth events can 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	

2-ESS2-2 Develop a model to represent the shapes and kinds of land and bodies of water in an area.
2-ESS2-3 Obtain information to identify where water is found on Earth and that it can be solid or liquid.

Interdisciplinary Skills
SL.2.1.A Follow agreed-upon norms for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).
SL.2.1.B Build on others' talk in conversations by linking their explicit comments to the remarks of others.
SL.2.1.C Ask for clarification and further explanation as needed about the topics and texts under discussion.

Career Readiness, Life Literacies, and Key Skills
9.1.2.RM.1: Describe how valuable items might be damaged or lost and ways to protect them.
9.1.2.CAP.1: Make a list of different types of jobs and describe the skills associated with each job.
9.1.2.CAP.3: Define entrepreneurship and social entrepreneurship.
9.4.2.CT.1: Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem (e.g., K-2-ETS1-1, 6.3.2.GeoGI.2).
 9.4.2.CT.2: Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3).
9.4.2.CT.3: Use a variety of types of thinking to solve problems (e.g., inductive, deductive)
9.4.2.TL.6: Illustrate and communicate ideas and stories using multiple digital tools (e.g., SL.2.5.).
9.4.2.CI.1: Demonstrate openness to new ideas and perspectives (e.g., 1.1.2.CR1a, 2.1.2.EH.1, 6.1.2.CivicsCM.2).
9.4.2.CI.2: Demonstrate originality and inventiveness in work (e.g., 1.3A.2CR1a).

Computer Science and Design Thinking
8.1.2.DA.1: Collect and present data, including climate change data, in various visual formats.
8.1.2.DA.3: Identify and describe patterns in data visualizations.
8.1.2.DA.4: Make predictions based on data using charts or graphs.
8.1.2.CS.1: Select and operate computing devices that perform a variety of tasks accurately and quickly based on user needs and preferences.

8.2.2.ITH.1: Identify products that are designed to meet human wants or needs.
8.2.2.ITH.3: Identify how technology impacts or improves life.
8.2.2.ITH.5: Design a solution to a problem affecting the community in a collaborative team and explain the intended impact of the solution.

Essential Understandings	Essential Questions
Students will understand that... ● Patterns in the natural world can be observed. ● Things may change slowly or rapidly such as erosion of rocks, glaciers melting, volcanic explosions, and earthquakes. ● Developing and using technology has impacts on the natural world. ● Humans have designed multiple solutions to slow or prevent wind or water from changing the shape of the land, such as windbreaks, shrubs, grass and trees.	● Why do some Earth events happen very slowly or quickly? ● What are different solutions designed to prevent wind or water changing the shape of land? ● How can a map represent the shape and kind of water in a specified area? ● Where and why is water on Earth found in both solid and liquid form?
Evidence of Student Learning	

Performance Tasks: *Activities to provide evidence for student learning of content and cognitive skills.*	Other Assessments
Create solutions to prevent wind and water damage 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. Use information from several sources to provide evidence that Earth events can occur quickly or slowly. Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.	**Formative Assessments** ● Graphic Organizers & Guided Note Taking ● Directed Reading ● Cooperative Group Learning ● Homework ● Journal Entries **Summative Assessments** ● RST- Research Simulation Task ● Associated Unit tests ● Quizzes

	● Labs and engineering based projects ● Benchmark **Benchmark Assessment** ● Science A-Z Benchmark Assessment **Alternative Assessments** ● Group Work/Class Discussion Rubric ● Guided Observations ● Questions Starters ● Participation Rubric ● Modified Tests/Quizzes/Classwork ● Science A-Z Activities ● Science Related Reading A-Z Activities ● Mystery Science Activities ● Fundamentals Unlimited Books and Assessments
Vocabulary	
Geology, water erosion, weathering, rock erosion, weathering, wind vane, barometer, thermometer, rain gauge, rock, minerals, volcano, topographic maps, plate tectonics, rock cycle, Earth's layers	
Knowledge and Skills	
Content	**Skills**
Students will know... ● Some events happen very quickly, others occur very slowly, over a time period much longer than one can observe ● Wind and water can change the shape of the land	*Students will be able to...* ● Investigate the properties of water. ● Develop a model to represent patterns in the natural world.

- Maps show where things are located - One can map the shapes and kinds of land and water in any area - Water is found in the ocean, rivers, lakes, and ponds - Water exists as solid ice and in liquid form - It is useful to compare and test designs when there is more than one solution to a problem	- Make observations from several sources to construct an evidence-based account for natural phenomena. - Compare multiple solutions to a problem. - 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.

Instructional Plan	
Suggested Activities	**Resources**
If you floated down a river, where would you end up? Students develop a model of the earth's surface and use it to discover an important principle about how rivers work.	https://mysteryscience.com/water/earth-s-surface-processes?r=6359979#water-1.0
Why is there sand at the beach? Students investigate the effects of rocks tumbling in a river. From the results of their investigation, they construct an explanation for why there is sand at a beach.	https://mysteryscience.com/water/mystery-2/erosion-earth-s-surface-landforms/113?r=6359979
What's strong enough to make a canyon? Students use a model of rain and land to explain what causes a canyon to form.	https://mysteryscience.com/water/mystery-3/erosion-earth-s-surface-landforms/114?r=6359979
How can you stop a landslide? Students compare multiple solutions for preventing erosion. In the activity, they design and test ways to keep water from washing away a hill modeled out of cornmeal.	https://mysteryscience.com/water/mystery-4/erosion-engineering/152?r=6359979

Literature	
● <u>Earthquakes</u>- SchoolWide ● <u>Erosion</u>- SchoolWide ● <u>How Mountains are Made</u>- SchoolWide ● <u>What Shapes the Land?</u>- SchoolWide	
Websites	
Activities related to every unit of science for grade two.	www.betterlesson.com
Science website with various second grade science activities. This website requires membership.	The Happy Scientist
Science website with various second grade science activities.	Hooked On Science
Earth science related activities.	Earth Sci Week
Modifications/Accommodations	
English Language Learners: ● Provide ELL students with multiple literacy strategies ● Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community ● Provide extra time ● Pre-teach vocabulary using visuals and gestures ● Chunk texts ● Summarize as you go ● Preview lessons ● Graphic Organizers ● Highlight key words ● Sentence starters	

- Prompting and cuing
- Activate schema
- Build background knowledge

Basic Skills/Economically Disadvantaged:
- Pre-teach vocabulary using visuals and gestures
- Chunk texts
- Summarize as you go
- Preview lessons
- Graphic organizers
- Highlight keywords
- Sentence Starters
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Gifted and Talented:
- Higher level questioning
- Students design questions
- Choice board to extend learning
- Expose to sophisticated vocabulary
- Extend reading response to further enrich understanding (see extension activities in unit binder)
- Discuss how readers and writers connect
- Create comic strip showing connections to reading lives: illustrate and caption
- Create poem using rich adjectives and detailed illustrations
- Write paragraph in notebook about things they are passionate about
- Have students choose someone in their family they would write a biography about and why
- Collect artifacts to decorate notebook at home-discuss with class
- Have students create a poster showing their favorite reading spot
- Have students create anchor charts to explain strategy taught to hand around the room
- Students can expand on discussions with family members in their notebooks
- Expand reading genre while independent reading to reflect a well-rounded book bag

Special education:
- Follow all IEP modifications/504 plan
- Teacher tutoring
- Peer tutoring
- Cooperative learning groups
- Modified assignments
- Differentiated instruction

504
- Follow 504 plan
- Modify the amount of homework
- Use written directions to supplement oral directions
- Reduce paper and pencil tasks
- Review concepts and important vocabulary from previous lessons before teaching new information
- Check for student understanding often with formal, informal, verbal, and nonverbal measures
- Progress Monitoring
- Model and reinforce organizational systems
- Small group instruction

Presentation accommodations allow a student to:
- Listen to audio recordings instead of reading text
- Learn content from audio books, movies, videos and digital media instead of reading print versions
- Work with fewer items per page or line and/or materials in a larger print size
- Have a designated reader
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- Record a lesson, instead of taking notes
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Response accommodations allow a student to:
- Give responses in a form (oral or written) that's easier for him

- Dictate answers to a scribe
- Capture responses on an audio recorder
- Use a spelling dictionary or electronic spell-checker
- Use a word processor to type notes or give responses in class
- Use a calculator or table of "math facts"

Setting accommodations allow a student to:

- Work or take a test in a different setting, such as a quiet room with few distractions
- Sit where he learns best (for example, near the teacher)
- Use special lighting or acoustics
- Take a test in small group setting
- Use sensory tools such as an exercise band that can be looped around a chair's legs (so fidgety kids can kick it and quietly get their energy out)

Timing accommodations allow a student to:

- Take more time to complete a task or a test
- Have extra time to process oral information and directions
- Take frequent breaks, such as after completing a task

Scheduling accommodations allow a student to:

- Take more time to complete a project
- Take a test in several timed sessions or over several days
- Take sections of a test in a different order
- Take a test at a specific time of day
-

Organization skills accommodations allow a student to:

- Use an alarm to help with time management
- Mark texts with a highlighter
- Have help coordinating assignments in a book or planner
- Receive study skills instruction

Assignment modifications allow a student to:
- Complete fewer or different homework problems than peers   - Write shorter papers   - Answer fewer or different test questions   - Create alternate projects or assignments   **Curriculum modifications allow a student to:**   - Learn different material (such as continuing to work on multiplication while classmates move on to fractions)   - Get graded or assessed using a different standard than the one for classmates

	Correlation Key	
Holocaust	Amistad	Financial Literacy

Career Readiness, Life Literacies, and Key Skills Practices	
Act as a responsible and contributing community members and employee.	Students understand the obligations and responsibilities of being a member of a community, and they demonstrate this understanding every day through their interactions with others. They are conscientious of the impacts of their decisions on others and the environment around them. They think about the near-term and long-term consequences of their actions and seek to act in ways that contribute to the betterment of their teams, families, community and workplace. They are reliable and consistent in going beyond the minimum expectation and in participating in activities that serve the greater good.
Consider the environmental, social and economic impacts of decisions.	Students understand the interrelated nature of their actions and regularly make decisions that positively impact and/or mitigate negative impact on other people, organization, and the environment. They are aware of and utilize new technologies, understandings, procedures, materials, and regulations affecting the nature of their work as it relates to the impact on the social condition, the environment and the profitability of the organization.

Demonstrate creativity and innovation.	Students regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization. They can consider unconventional ideas and suggestions as solutions to issues, tasks or problems, and they discern which ideas and suggestions will add greatest value. They seek new methods, practices, and ideas from a variety of sources and seek to apply those ideas to their own workplace. They take action on their ideas and understand how to bring innovation to an organization.
Utilize critical thinking to make sense of problems and persevere in solving them.	Students readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem. They are aware of problems when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. They carefully consider the options to solve the problem. Once a solution is agreed upon, they follow through to ensure the problem is solved, whether through their own actions or the actions of others.
Model integrity, ethical leadership and effective management.	Students consistently act in ways that align personal and community-held ideals and principles while employing strategies to positively influence others in the workplace. They have a clear understanding of integrity and act on this understanding in every decision. They use a variety of means to positively impact the directions and actions of a team or organization, and they apply insights into human behavior to change others' action, attitudes and/or beliefs. They recognize the near-term and long-term effects that management's actions and attitudes can have on productivity, morals and organizational culture.

Plan education and career paths aligned to personal goals.	Students take personal ownership of their own education and career goals, and they regularly act on a plan to attain these goals. They understand their own career interests, preferences, goals, and requirements. They have perspective regarding the pathways available to them and the time, effort, experience and other requirements to pursue each, including a path of entrepreneurship. They recognize the value of each step in the education and experiential process, and they recognize that nearly all career paths require ongoing education and experience. They seek counselors, mentors, and other experts to assist in the planning and execution of career and personal goals.
Use technology to enhance productivity, increase collaboration and communicate effectively.	Students find and maximize the productive value of existing and new technology to accomplish workplace tasks and solve workplace problems. They are flexible and adaptive in acquiring new technology. They are proficient with ubiquitous technology applications. They understand the inherent risks-personal and organizational-of technology applications, and they take actions to prevent or mitigate these risks.
Work productively in teams while using cultural/global competence.	Students positively contribute to every team, whether formal or informal. They apply an awareness of cultural differences to avoid barriers to productive and positive interaction. They find ways to increase the engagement and contribution of all team members. They plan and facilitate effective team meetings.

Unit 4: Engineering and Design	Duration: Ongoing

Standards

K-2-ETS-1-1 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-ETS-1-2 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.
K-2-ETS-1-3 Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs

Interdisciplinary Skills
SL.2.1.A Follow agreed-upon norms for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).
SL.2.1.B Build on others' talk in conversations by linking their explicit comments to the remarks of others.

Career Readiness, Life Literacies, and Key Skills
9.1.2.CAP.1: Make a list of different types of jobs and describe the skills associated with each job.
9.4.2.CT.1: Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem (e.g., K-2-ETS1-1, 6.3.2.GeoGI.2).
 9.4.2.CT.2: Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3).
9.4.2.CT.3: Use a variety of types of thinking to solve problems (e.g., inductive, deductive)
9.4.2.TL.6: Illustrate and communicate ideas and stories using multiple digital tools (e.g., SL.2.5.).
9.4.2.CI.1: Demonstrate openness to new ideas and perspectives (e.g., 1.1.2.CR1a, 2.1.2.EH.1, 6.1.2.CivicsCM.2).
9.4.2.CI.2: Demonstrate originality and inventiveness in work (e.g., 1.3A.2CR1a).

Computer Science and Design Thinking
8.1.2.DA.1: Collect and present data, including climate change data, in various visual formats.
8.1.2.DA.3: Identify and describe patterns in data visualizations.
8.1.2.DA.4: Make predictions based on data using charts or graphs.
8.1.2.CS.1: Select and operate computing devices that perform a variety of tasks accurately and quickly based on user needs and preferences.
8.2.2.ITH.1: Identify products that are designed to meet human wants or needs.
8.2.2.ITH.3: Identify how technology impacts or improves life.

Essential Understandings	Essential Questions
Students will understand that... ● The shape and stability of structures of natural and designed objects are related to their function(s). ● 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. ● Because there is always more than one possible solution to a problem, it is useful to compare and test designs.	● How are asking questions, gathering information, and making observation helpful when thinking about problems? ● How does sketching or creating a model to illustrate its shape help solve a given problem? ● How does testing a model determine its strengths and weaknesses in solving a given problem?
Evidence of Student Learning	
Performance Tasks: *Activities to provide evidence for student learning of content and cognitive skills.*	**Other Assessments**
Erosion can be a big problem in our environment. Students can be proactive to stop its destruction. Design an erosion control of your own.	**Formative Assessments** ● Graphic Organizers & Guided Note Taking ● Directed Reading ● Cooperative Group Learning ● Homework ● Journal Entries

	Summative Assessments ● RST- Research Simulation Task ● Associated Unit tests, quizzes ● Labs and engineering based projects **Benchmark Assessment** ● Science A-Z Benchmark Assessment **Alternative Assessments** ● Group Work/Class Discussion Rubric ● Guided Observations ● Questions Starters ● Participation Rubric ● Modified Tests/Quizzes/Classwork ● Science A-Z Activities ● Science Related Reading A-Z Activities ● Mystery Science Activities ● Fundamentals Unlimited Books and Assessments
Vocabulary	
Technology, engineering, technological design	
Knowledge and Skills	
Content	**Skills**
Students will know...	Students will be able to …

- 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 - Because there is always more than one possible solution to a problem, it is useful to compare and test designs	- Ask questions based on observations to find more information about the natural and/or designed world(s). - 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. - Analyze data from tests of an object or tool to determine if it works as intended.

Instructional Plan	
Suggested Activities	**Resources**
Evidence of erosion The class will take a mini field trip on the school grounds to find evidence of erosion. As they find evidence, the students will stop, observe and report. We then discuss the types of erosion damage 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.	https://betterlesson.com/lesson/640745/finding-erosion-at-our-school
Shade Students will demonstrate knowledge of the engineering and design process by creating a structure that provides shade.	https://betterlesson.com/lesson/644795/a-place-in-the-shade-an-engineering-challenge

Student Engineers Student teams are challenged to navigate a table tennis ball through a timed obstacle course using only the provided unconventional "tools." Teams act as engineers by working through the steps of the engineering design process to complete the overall task with each group member responsible to accomplish one of the obstacle course challenges.	https://www.teachengineering.org/activities/view/ucd_derbytool_activity1
Building Bridges Students explore why bridges are shaped differently. Students distinguish between beam, arch, and suspension bridges and learn how bridge designs counteract and redirect forces and motion. In the culminating design challenge, students design, construct, and test their own bridges.	http://www.asee.org/documents/conferences/k12/2011/07/17-Ready-for-Primary-Time.pdf
Gases Students will demonstrate knowledge of gases to design and build a model of a hot air balloon that will float.	http://www.resa.net/curriculum/curriculum/science/professionaldevelopment/ngss-pd/lesson-plans-exploring-ngss/ (hot air balloon challenge)
Literature	
- Building a House by Byron Barton - Engineering the ABC's: How Engineers Shape Our World by Patty O'Brien Novak - Janice VanCleave's Engineering for Every Kid: Easy Activities That Make Learning Science Fun by Janice VanCleave - Three Billy Goats Gruff by Peter Christen Asbjørnsen - How Things Work: 100 Ways Parents and Kids Can Share the Secrets of Technology by Neil Ardley - Horace King: Bridges to Freedom by Faye Gibbons	
Websites	

Activities related to every unit of science for grade two.	www.betterlesson.com
Science website with various second grade science activities. This website requires membership.	The Happy Scientist
Science website with various second grade science activities.	Hooked On Science
RESA - Leading learning for all Website with multiple science activities for NGSS	http://www.resa.net/curriculum/curriculum/science/professionaldevelopment/ngss-pd/lesson-plans-exploring-ngss/
Modifications/Accommodations	

English Language Learners:
- Provide ELL students with multiple literacy strategies
- Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community
- Provide extra time
- Pre-teach vocabulary using visuals and gestures
- Chunk texts
- Summarize as you go
- Preview lessons
- Graphic Organizers
- Highlight key words
- Sentence starters
- Prompting and cuing
- Activate schema
- Build background knowledge

Basic Skills/Economically Disadvantaged:
- Pre-teach vocabulary using visuals and gestures
- Chunk texts

- Summarize as you go
- Preview lessons
- Graphic organizers
- Highlight keywords
- Sentence Starters
- Prompting and cuing
- Activate schema
- Build background knowledge

Gifted and Talented:
- Higher level questioning
- Students design questions
- Choice board to extend learning
- Expose to sophisticated vocabulary
- Extend reading response to further enrich understanding (see extension activities in unit binder)
- Discuss how readers and writers connect
- Create comic strip showing connections to reading lives: illustrate and caption
- Create poem using rich adjectives and detailed illustrations
- Write paragraph in notebook about things they are passionate about
- Have students choose someone in their family they would write a biography about and why
- Collect artifacts to decorate notebook at home-discuss with class
- Have students create a poster showing their favorite reading spot
- Have students create anchor charts to explain strategy taught to hand around the room
- Students can expand on discussions with family members in their notebooks
- Expand reading genre while independent reading to reflect a well-rounded book bag

Special education:
- Follow all IEP modifications
- Teacher tutoring
- Peer tutoring
- Cooperative learning groups
- Modified assignments

- Differentiated instruction

504
- Follow 504 plan
- Modify the amount of homework
- Use written directions to supplement oral directions
- Reduce paper and pencil tasks
- Review concepts and important vocabulary from previous lessons before teaching new information
- Check for student understanding often with formal, informal, verbal, and nonverbal measures
- Progress Monitoring
- Model and reinforce organizational systems
- Small group instruction

Presentation accommodations allow a student to:
- Listen to audio recordings instead of reading text
- Learn content from audio books, movies, videos and digital media instead of reading print versions
- Work with fewer items per page or line and/or materials in a larger print size
- Have a designated reader
- Hear instructions orally
- Record a lesson, instead of taking notes
- Have another student share class notes with him
- Be given an outline of a lesson
- Use visual presentations of verbal material, such as word webs and visual organizers
- Be given a written list of instructions

Response accommodations allow a student to:
- Give responses in a form (oral or written) that's easier for him
- Dictate answers to a scribe
- Capture responses on an audio recorder
- Use a spelling dictionary or electronic spell-checker

- Use a word processor to type notes or give responses in class
- Use a calculator or table of "math facts"
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Setting accommodations allow a student to:
- Work or take a test in a different setting, such as a quiet room with few distractions
- Sit where he learns best (for example, near the teacher)
- Use special lighting or acoustics
- Take a test in small group setting
- Use sensory tools such as an exercise band that can be looped around a chair's legs (so fidgety kids can kick it and quietly get their energy out)

Timing accommodations allow a student to:
- Take more time to complete a task or a test
- Have extra time to process oral information and directions
- Take frequent breaks, such as after completing a task

Scheduling accommodations allow a student to:
- Take more time to complete a project
- Take a test in several timed sessions or over several days
- Take sections of a test in a different order
- Take a test at a specific time of day

Organization skills accommodations allow a student to:
- Use an alarm to help with time management
- Mark texts with a highlighter
- Have help coordinating assignments in a book or planner
- Receive study skills instruction

Assignment modifications allow a student to:

- Complete fewer or different homework problems than peers
- Write shorter papers
- Answer fewer or different test questions
- Create alternate projects or assignments

Curriculum modifications allow a student to:

- Learn different material (such as continuing to work on multiplication while classmates move on to fractions)
- Get graded or assessed using a different standard than the one for classmates