twig SCIENCE Grade 2 Scope and Sequence

ASSESSMENT All modules include: Pre-Exploration, Formative Assessment, Performance Task, and Multiple Choice Assessment

MODULES	MODULE ANCHOR PHENOMENON	STORYLINE	PERFORMANCE EXPECTATIONS (*PEs that integrate traditional science content with engineering through SEPs or DCIs)	NGSS		CROSS-CURRICULAR CONNECTIONS	
1: My Journey West **NGSS Topic Arrangements: Earth's Systems** 	How can we understand and describe the land and water on Earth?	It's time to hit the road! Students uncover a time capsule buried in the 1930s by seven-year-old Ruthie, detailing her family's journey across the United States. Through diary entries, videos, images, and audio clips, students follow Ruthie from the dust bowl of Oklahoma to her new life in California, learning about the landscape on the way. Students explore the amazing landforms she passes through, and build model landscapes out of clay. They find out how water influences the physical environment, and learn about what maps look like and how they are used.	**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.	**Crosscutting Concepts** **CCC-1** Patterns **CCC-2** Cause and Effect **CCC-3** Scale, Proportion, and Quantity **Disciplinary Core Ideas** **ESS2.B** Plate Tectonics and Large-Scale System Interactions **ESS2.C** The Roles of Water in Earth's Surface Processes	**Science and Engineering Practices** **SEP-1** Asking Questions and Defining Problems **SEP-2** Developing and Using Models **SEP-3** Planning and Carrying Out Investigations **SEP-4** Analyzing and Interpreting Data **SEP-5** Using Mathematics and Computational Thinking **SEP-7** Engaging in Argument from Evidence **SEP-8** Obtaining, Evaluating, and Communicating Information **Environmental Principles and Concepts** **Principle I** People depend on natural systems	**Common Core English Language Arts** **RI.2.1, 3** Key Ideas and Details **RI.3.4–6** Craft and Structure **RI.2.7–9** Integration of Knowledge and Ideas **RI.2.10** Range of Reading and Level of Text Complexity **L.2.6** Vocabulary Acquisition and Use **SL.2.1–3** Comprehension and Collaboration **SL.2.4–5** Presentation of Knowledge and Ideas **W.2.2** Text Types and Purposes **W.2.5** Production and Distribution of Writing **W.2.7** Research to Build and Present Knowledge **WIDA English Language Development** **Standard 1:** Social and Instructional Language **Standard 2:** The Language of Language Arts **Standard 3:** The Language of Mathematics **Standard 4:** The Language of Science	**English Language Proficiency Domains** Speaking, Listening, Reading, Writing **Common Core Math** **2.G.A** Reason with shapes and their attributes **2.MD.A** Measure and estimate lengths in standard units **2.MD.D** Represent and interpret data **2.NBT.A** Understand place value **MP5** Use appropriate tools strategically **MP7** Look for and make use of structure
2: Master of Materials **NGSS Topic Arrangements: Structure and Properties of Matter; Engineering Design** 	How can we describe materials as different from one another and understand how their properties relate to their use?	Students work through a series of levels and unlock badges to become "Masters of Materials." They progress from Junior Researchers, who can describe, compare and sort materials, to Professors of Properties, who use what they've learned to design and build bridges. They also become engineers by building and testing towers, and discover how the properties of materials can change by making their own crayons. Only when all five levels are complete will students be able to call themselves Masters!	**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** 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 in matter, caused by mixing, heating, or cooling can be reversed and some cannot. **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. **K–2-ETS1-3** Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	**Crosscutting Concepts** **CCC-1** Patterns **CCC-2** Cause and Effect **CCC-5** Energy and Matter **CCC-6** Structure and Function **Disciplinary Core Ideas** **PS1.A** Structure and Properties of Matter **PS1.B** Chemical Reactions **Engineering, Technology, and Applications of Science** **ETS1.C** Optimizing the Design Solution	**Science and Engineering Practices** **SEP-1** Asking Questions and Defining Problems **SEP-2** Developing and Using Models **SEP-3** Planning and Carrying Out Investigations **SEP-4** Analyzing and Interpreting Data **SEP-5** Using Mathematics and Computational Thinking **SEP-6** Constructing Explanations and Designing Solutions **SEP-7** Engaging in Argument from Evidence **SEP-8** Obtaining, Evaluating, and Communicating Information **Environmental Principles and Concepts** **Principle I** People depend on natural systems **Principle II** People influence natural systems **Principle IV** There are no permanent or impermeable boundaries that prevent matter from flowing between systems	**Common Core English Language Arts** **RI.2.1, 3** Key Ideas and Details **RI.3.5, 6** Craft and Structure **RI.2.9** Integration of Knowledge and Ideas **L.2.4–6** Vocabulary Acquisition and Use **RL..2.1** Key Ideas and Details **RL.2.10** Range of Reading and Level of Text Complexity **SL.2.1–3** Comprehension and Collaboration **SL.2.4–6** Presentation of Knowledge and Ideas **W.2.2** Text Types and Purposes **W.2.5** Production and Distribution of Writing **W.2.7–8** Research to Build and Present Knowledge **WIDA English Language Development** **Standard 1:** Social and Instructional Language **Standard 2:** The Language of Language Arts **Standard 3:** The Language of Mathematics **Standard 4:** The Language of Science	**English Language Proficiency Domains** Speaking, Listening, Reading, Writing **Common Core Math** **2.G.A** Reason with shapes and their attributes **2.MD.D** Represent and interpret data **2.NBT.A** Understand place value **2.NBT.B** Use place value understanding and properties of operations to add and subtract **2.OA.B** Add and subtract within 20 **MP1** Make sense of problems and persevere in solving them **MP4** Model with mathematics **MP7** Look for and make use of structure
3: Save the Island **NGSS Topic Arrangements: Earth's Systems; Engineering Design** 	How do natural processes shape the Earth?	The world is changing all around us. Sometimes this puts communities at risk, so scientists and engineers work hard to protect us—whether it's finding ways to hold back floods, or stopping beaches disappearing from right before our eyes. In this module, students investigate the fast and slow ways that landforms change, discover some of the engineering solutions used to slow down or prevent erosion, and apply what they've learned to the island of Tangier in Virginia. Tangier is at risk of disappearing beneath the waves as a result of coastal erosion—can your students come up with ideas to help?	**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.* **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.	**Crosscutting Concepts** **CCC-2** Cause and Effect **CCC-3** Scale, Proportion and Quantity **CCC-6** Structure and Function **CCC-7** Stability and Change **Disciplinary Core Ideas** **ESS1.C** The History of Planet Earth **ESS2.A** Earth Materials and Systems **Engineering, Technology, and Applications of Science** **ETS1.A** Defining and Delimiting an Engineering Problem **ETS1.B** Developing Possible Solutions **ETS1.C** Optimizing the Design Solution	**Science and Engineering Practices** **SEP-1** Asking Questions and Defining Problems **SEP-2** Developing and Using Models **SEP-3** Planning and Carrying Out Investigations **SEP-6** Constructing Explanations and Designing Solutions **SEP-7** Engaging in Argument from Evidence **SEP-8** Obtaining, Evaluating, and Communicating Information **Environmental Principles and Concepts** **Principle II** People influence natural systems **Principle V** Decisions affecting resources and natural systems are complex and involve many factors	**Common Core English Language Arts** **RI.2.1–3** Key Ideas and Details **RI.3.4–6** Craft and Structure **RI.2.7–8** Integration of Knowledge and Ideas **RI.2.10** Range of Reading and Level of Text Complexity **L.2.6** Vocabulary Acquisition and Use **SL.2.1–3** Comprehension and Collaboration **SL.2.4–6** Presentation of Knowledge and Ideas **W.2.1–2** Text Types and Purposes **W.2.7–8** Research to Build and Present Knowledge **WIDA English Language Development** **Standard 1:** Social and Instructional Language **Standard 2:** The Language of Language Arts **Standard 3:** The Language of Mathematics **Standard 4:** The Language of Science	**English Language Proficiency Domains** Speaking, Listening, Reading, Writing **Common Core Math:** **2.MD.C** Work with time and money **2.NBT.A** Understand place value **MP1** Make sense of problems and persevere in solving them **MP2** Reason abstractly and quantitatively **MP3** Construct viable arguments and critique the reasoning of others
4: A Garden for Life **NGSS Topic Arrangements: Interdependent Relationships in Ecosystems; Engineering Design** 	How do living things in an environment depend on one another and what do they need to grow?	Students create a habitat for plants and animals, by planning and building a school garden! They explore the concept of biodiversity, plan and carry out investigations into what plants need to grow, and use their findings to inform their garden designs. Students also discover the way flowering plants and pollinators such as bees depend on each other, and model the process of pollination in the classroom. Using their new knowledge, students ensure their garden will be the perfect place for pollinators and plants to live and thrive. Let it grow!	**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 when dispersing seeds or pollinating plants.* **2-LS4-1** Make observations of plants and animals to compare the diversity of life in different habitats. **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.	**Crosscutting Concept** **CCC-1** Patterns **CCC-2** Cause and Effect **CCC-6** Structure and Function **Disciplinary Core Ideas** **LS2.A** Interdependent Relationships in Ecosystems **LS4.D** Biodiversity and Humans **Engineering, Technology, and Applications of Science** **ETS1.A** Defining and Delimiting an Engineering Problem **ETS1.B** Developing Possible Solutions	**Science and Engineering Practices** **SEP-1** Asking Questions and Defining Problems **SEP-2** Developing and Using Models **SEP-3** Planning and Carrying Out Investigations **SEP-4** Analyzing and Interpreting Data **SEP-6** Constructing Explanations and Designing Solutions **SEP-7** Engaging in Argument from Evidence **SEP-8** Obtaining, Evaluating, and Communicating Information **Environmental Principles and Concepts** **Principle I** People depend on natural systems **Principle II** People influence natural systems **Principle III** Natural systems change in ways that people benefit from and can influence	**Common Core English Language Arts** **RI.2.1–2** Key Ideas and Details **RI.2.6** Craft and Structure **RI.2.7** Integration of Knowledge and Ideas **RI.2.10** Range of Reading and Level of Text Complexity **L.2.6** Vocabulary Acquisition and Use **SL.2.1–3** Comprehension and Collaboration **SL.2.4–6** Presentation of Knowledge and Ideas **W.2.1–2** Text Types and Purposes **W.2.8** Research to Build and Present Knowledge **WIDA English Language Development** **Standard 1:** Social and Instructional Language **Standard 2:** The Language of Language Arts **Standard 3:** The Language of Mathematics **Standard 4:** The Language of Science	**English Language Proficiency Domains** Speaking, Listening, Reading, Writing **Common Core Math** **2.G.A** Reason with shapes and their attributes **2.MD.A** Measure and estimate lengths in standard units **2.MD.D** Represent and interpret data **MP4** Model with mathematics