Evaluator: 59 Grade Level: Kindergarten Program: FOSS

Washoe County School District K-5 Science
2020 Instructional Materials Evaluation Rubric
(Certified Teaching Professional Form)

Category 1: Designed for Three-Dimensional Learning

Criterion 1A: Phenomena and Problems

Instructional materials focus on students making sense of phenomena or designing solutions to problems which drives student learning.

- Students are engaged with phenomena or problems that can be explained or solved through the application of the three-dimensions.
- A good phenomenon builds on everyday student experiences and targets grade appropriate learning goals.
- Anchoring, investigative and everyday phenomena may be present.
- Engineering lessons require students to use elements of the science core ideas together with elements of core ideas from engineering design to solve problems.

Less of this:	**More** of this:
Phenomena are just for the initial hook.	Phenomena drives the learning.
Phenomena are fun or flashy to engage students.	Phenomena that builds on everyday experiences supports engagement.
Phenomena are brought in after students develop the science ideas so they can apply what they learned.	The development of science ideas is anchored in investigations of phenomena.
Engineering problems are unrelated to the science learning.	Engineering involves designing solutions to problems that arise from phenomena.

Examples of Evidence:

- ◊ Photographs of trash washed up on a beach that leads into a unit on waves in 4th grade physical science unit. (A first-hand experience, video, photograph or data set to start a learning sequence that becomes the "why" for further study grounded in everyday student experiences.)
- ◊ A time lapse video of a badger decomposing is shown to start a life science unit on matter and energy in ecosystems. Students return to the video throughout to explain what is happening.
- ◊ Garbage from the lunchroom is examined to start a unit on matter and how it changes in the 5th grade physical science unit.
- ◊ 3rd grade students explore balloons, aluminum cans, styrofoam beads, and transparent tape to make observations and generate questions about static electricity in the physical science unit, lesson 3.
- ◊ Students address the problem of communicating at a distance without sound following a study of light in the 1st grade physical science unit.

Specific Evidence from Materials

STORYLINE

Students, with guidance, ask questions and then plan and carry out investigations with peers comparing the structures and behaviors of similar kinds of animals, some that live in water, like fish and snails, and others that live on land, like birds, worms, snails, and isopods. Next, they use models to represent relationships in the natural world (animals in their habitat). Then they construct explanations about the needs of animals based on firsthand observations and media. Finally, students communicate information orally and using models and drawings about the needs of animals in different habitats to live and grow.

To what extent do the materials support Criterion 1A? Include your reasoning.
Every unit sets the students up with a real purpose. The phenomena can be connected to everyday experience. Learning is anchored in science.

Criterion 1B: Integrating the Three-Dimensions

Instructional materials integrate elements of the Science and Engineering Practices, Crosscutting Concepts and Disciplinary Core Ideas.

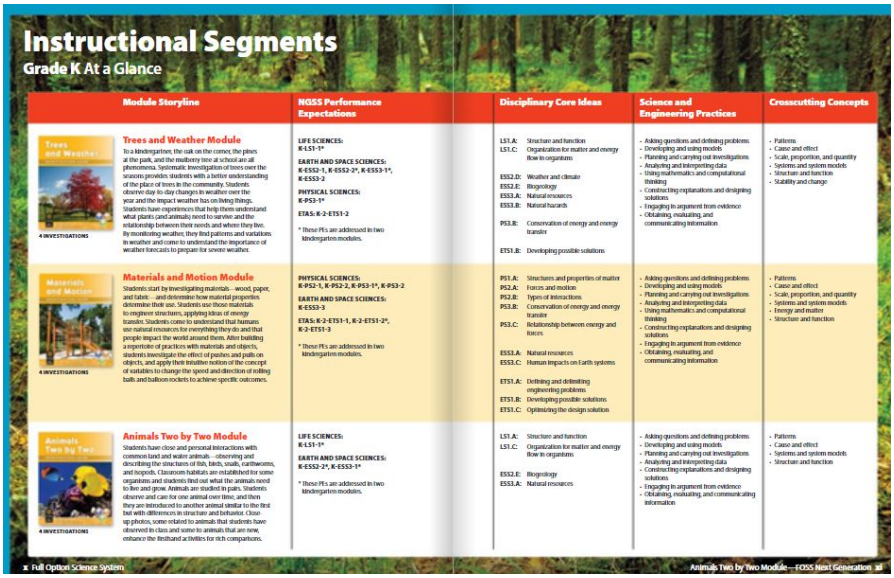
- Students develop and use multiple grade-appropriate elements of each dimension.
- The dimensions are integrated to work together and are not taught in isolation.
- Learning experiences integrate multiple different pairings of the dimensions to build understanding of the targeted performance expectations.
- Engineering is integrated with at least once per domain of science.

Less of this:	**More** of this:
Students only engage in a single practice element in a lesson.	The lesson helps students use and develop multiple practice elements.
Lessons teach the dimensions separately or only address them at the general level.	Lessons integrate grade-appropriate elements for each dimension.
Engineering lessons focus on trial and error activities that don't require science or engineering knowledge.	Grade-appropriate elements of engineering design and science core ideas are integrated with the other dimensions.
Engineering consists of challenges or step-by-step directions to build something.	Engineering is integrated into the grade-appropriate science core ideas and use explanations of phenomena to design solutions.

Examples of Evidence:

- ◊ 4th grade students conduct an investigation using fair tests in which variables are controlled and the number of trials considered, including collecting measurements and representing data in tables, with balls and ramps to determine cause and effect relationships of speed and energy in unit 2 lesson 4.
- ◊ Students ask questions about waves moving objects and collaboratively investigate how to make different looking waves in water and analyze how these waves affect a floating object in the physical science unit.
- ◊ 3rd grade students generate, test and refine solutions to keep two moving objects from touching each other by applying ideas learned about magnets in lesson 9.
- ◊ With teacher guidance, kindergarten students conduct an investigation with peers to compare the effects of different directions of pushes and pulls on playground balls, student chairs and erasers on different surfaces in the physical science unit, lesson 3.

Specific Evidence from Materials
See the link to Crosscutting concepts on the side of the lesson



Instructional Segments

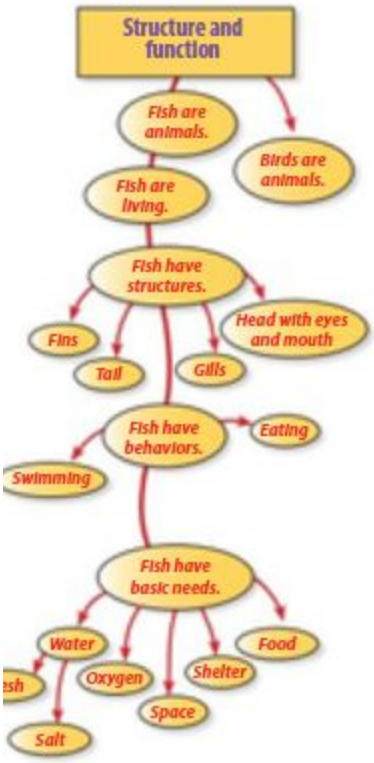
Grade K At a Glance

Module Storyline	NGSS Performance Expectations	Disciplinary Core Ideas	Science and Engineering Practices	Crosscutting Concepts
Trees and Weather Module To a kindergartner, the oak on the corner, the pines at the park, and the mulberry tree at school are all phenomena. Systematic investigation of trees over the seasons provides students with a better understanding of the place of trees in the community. Students observe day-to-day changes in weather over the year and the impact weather has on living things. Students have experiences that help them understand what plants (and animals) need to survive and the relationship between their needs and where they live. By monitoring weather, they find patterns and variations in weather and come to understand the importance of weather forecasts to prepare for severe weather. 4 INVESTIGATIONS	LIFE SCIENCES: K-LS1-1* EARTH AND SPACE SCIENCES: K-ESS2-1, K-ESS2-2*, K-ESS3-1*, K-ESS3-2 PHYSICAL SCIENCES: K-PS3-1* ETAS: K-2-ETS1-2 * These PEs are addressed in two kindergarten modules.	LS1.A: Structure and function LS1.C: Organization for matter and energy flow in organisms ESS2.D: Weather and climate ESS2.E: Biogeology ESS3.A: Natural resources ESS3.B: Natural hazards PS3.B: Conservation of energy and energy transfer ETS1.B: Developing possible solutions	- Asking questions and defining problems - Developing and using models - Planning and carrying out investigations - Analyzing and interpreting data - Using mathematics and computational thinking - Constructing explanations and designing solutions - Engaging in argument from evidence - Obtaining, evaluating, and communicating information	- Patterns - Cause and effect - Scale, proportion, and quantity - Systems and system models - Structure and function - Stability and change
Materials and Motion Module Students start by investigating materials—wood, paper, and fabric—and determine how material properties determine their use. Students use these materials to engineer structures, applying ideas of energy transfer. Students come to understand that humans use natural resources for everything they do and that people impact the world around them. After building a repertoire of practices with materials and objects, students investigate the effect of pushes and pulls on objects, and apply their intuitive notion of the concept of variables to change the speed and direction of rolling balls and balloon rockets to achieve specific outcomes. 4 INVESTIGATIONS	PHYSICAL SCIENCES: K-PS2-1, K-PS2-2, K-PS3-1*, K-PS3-2 EARTH AND SPACE SCIENCES: K-ESS3-3 ETAS: K-2-ETS1-1, K-2-ETS1-2*, K-2-ETS1-3 * These PEs are addressed in two kindergarten modules.	PS1.A: Structures and properties of matter PS2.A: Forces and motion PS2.B: Types of interactions PS3.B: Conservation of energy and energy transfer PS3.C: Relationship between energy and forces ESS3.A: Natural resources ESS3.C: Human impacts on Earth systems ETS1.A: Defining and delimiting engineering problems ETS1.B: Developing possible solutions ETS1.C: Optimizing the design solution	- Asking questions and defining problems - Developing and using models - Planning and carrying out investigations - Analyzing and interpreting data - Using mathematics and computational thinking - Constructing explanations and designing solutions - Engaging in argument from evidence - Obtaining, evaluating, and communicating information	- Patterns - Cause and effect - Scale, proportion, and quantity - Systems and system models - Energy and matter - Structure and function
Animals Two by Two Module Students have close and personal interactions with common land and water animals—observing and describing the structures of fish, birds, snails, earthworms, and isopods. Classroom habitats are established for some organisms and students find out what the animals need to live and grow. Animals are studied in pairs. Students observe and care for one animal over time, and then they are introduced to another animal similar to the first but with differences in structure and behavior. Close-up photos, some related to animals that students have observed in class and some to animals that are new, enhance the firsthand activities for rich comparisons. 4 INVESTIGATIONS	LIFE SCIENCES: K-LS1-1* EARTH AND SPACE SCIENCES: K-ESS2-2*, K-ESS3-1* * These PEs are addressed in two kindergarten modules.	LS1.A: Structure and function LS1.C: Organization for matter and energy flow in organisms ESS2.E: Biogeology ESS3.A: Natural resources	- Asking questions and defining problems - Developing and using models - Planning and carrying out investigations - Analyzing and interpreting data - Constructing explanations and designing solutions - Engaging in argument from evidence - Obtaining, evaluating, and communicating information	- Patterns - Cause and effect - Systems and system models - Structure and function

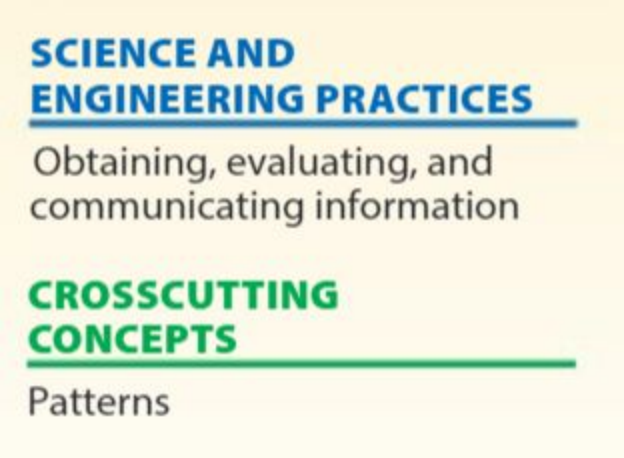
x Full Option Science System — Animals Two by Two Module—FOSS Next Generation xi

- **Patterns.** Structures of fish are similar but they have differences in how they look and where they live.
- **Cause and effect.** Fish can change their water environment over time.
- **Systems and system models.** Fish and birds can be described in terms of their structures.
- **Structure and function.** The observable structures of fish (head, eyes, mouth, fins, tail) and birds (head, eyes, beak, wings, tail) serve functions in survival.

- **Asking questions** about different kinds of fish and birds and the places where they live and get resources.
- **Developing and using a model** of a fish aquarium to show the relationship between the animals and their environment.
- **Planning and carrying out investigations** in collaboration with peers and with adult guidance involving fish and birds to observe their structures and study their environmental needs; make predictions based on prior experiences.
- **Analyzing and interpreting data** by describing observations of the fish over time, recording information, using and sharing notebook entries, including writing and labeled pictures. Students use their firsthand observations and those of others in the classroom to describe the patterns they observe in fish aquaria to answer scientific questions. Students compare their predictions to actual outcomes.
- **Constructing explanations** by making firsthand observations of fish and birds and using this as evidence to answer questions about the needs of animals, including food; supporting arguments with evidence.



Conceptual flow



To what extent do the materials support Criterion 1B? Include your reasoning.
There is strong evidence of integrating the 3 Dimensions. The examples are connected to the unit and support a teacher's understanding as well as the understanding of students.

Criterion 1C: Coherence

Instructional materials help students develop increasingly sophisticated understandings within and across grade-levels.

- Lessons fit together to target a set of performance expectations with multiple opportunities for students to revise understandings over time.
- Instructional materials make connections between lessons, units and grade levels.
- Lessons build on students' prior learning in all three dimensions.
- Students engage in learning experiences with explicit connections to other science disciplines and other subjects with intention.

Less of this:	**More** of this:
Lessons are unrelated.	Lessons are presented in a logical sequence to develop understandings.
Lessons build on prior learning but only for the DCIs.	Lessons work together with students' foundational knowledge and practice from prior lessons and grade levels.
Science domains are taught in isolation.	When appropriate, science domains are integrated to show connections.
Other subjects, when included, are not intentionally chosen to support grade-level standards.	Grade-level appropriate standards from ELA, math or other subject areas are integrated with science learning.

Examples of Evidence:

- ◊ In the first unit, students address the physical science standards around the phenomena of garbage and partially address a life science standard related to decomposers. In the second unit on ecosystems, students extend and apply their understanding of decomposers which leads to an engineering problem about materials such as plastics that do not decompose.
- ◊ 5th grade students are investigating water sources around the Earth and make connections to properties of matter in both the physical science and earth science units and prior learning about weather and climate from 3rd grade.
- ◊ 2nd grade students plan and conduct an investigation with water and earth materials as a whole class in one lesson and then in the next lesson students work with a small group to plan and conduct another investigation with wind and earth materials to further learning of core ideas and practices.
- ◊ Students apply ELA learning to write a set of directions for conducting an investigation in the earth science unit, lesson 6.
- ◊ Students use line plots to analyze climate data in grade 3, unit 4.

Specific Evidence from Materials

Trees and Weather Module

To a kindergartner, the oak on the corner, the pines at the park, and the mulberry tree at school are all phenomena. Systematic investigation of trees over the seasons provides students with a better understanding of the place of trees in the community. Students observe day-to-day changes in weather over the year and the impact weather has on living things. Students have experiences that help them understand what plants (and animals) need to survive and the relationship between their needs and where they live. By monitoring weather, they find patterns and variations in weather and come to understand the importance of weather forecasts to prepare for severe weather.

Materials and Motion Module

Students start by investigating materials—wood, paper, and fabric—and determine how material properties determine their use. Students use those materials to engineer structures, applying ideas of energy transfer. Students come to understand that humans use natural resources for everything they do and that people impact the world around them. After building a repertoire of practices with materials and objects, students investigate the effect of pushes and pulls on objects, and apply their intuitive notion of the concept of variables to change the speed and direction of rolling balls and balloon rockets to achieve specific outcomes.

Animals Two by Two Module

Students have close and personal interactions with common land and water animals—observing and describing the structures of fish, birds, snails, earthworms, and isopods. Classroom habitats are established for some organisms and students find out what the animals need to live and grow. Animals are studied in pairs. Students observe and care for one animal over time, and then they are introduced to another animal similar to the first but with differences in structure and behavior. Close-up photos, some related to animals that students have observed in class and some to animals that are new, enhance the firsthand activities for rich comparisons.

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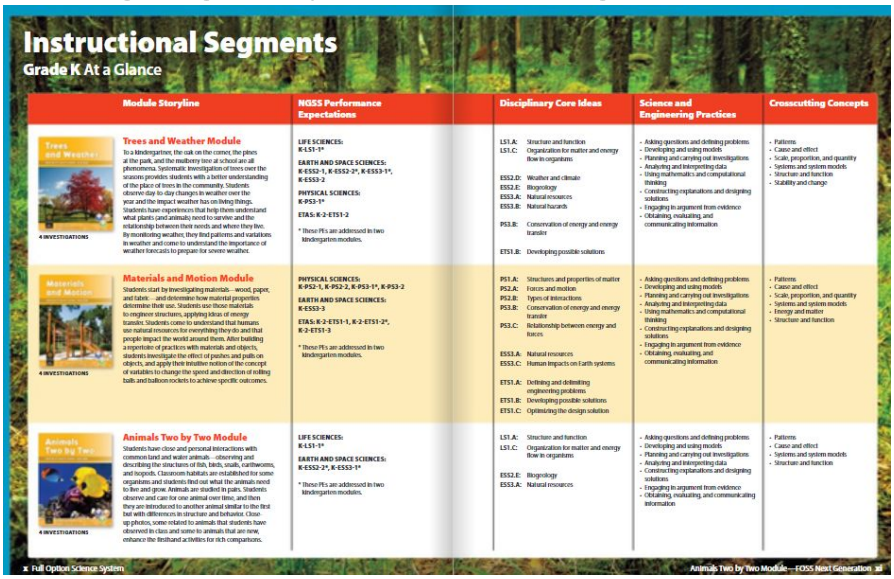
Learning progress by topic across the grade levels



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Full Option Science System — Animals Two by Two Module—FOSS Next Generation

To what extent do the materials support Criterion 1C? Include your reasoning.
There is strong evidence of coherence across and within a unit and grade level. This is a strength of the program.

Category 2: Instructional Supports

Criterion 2A: Assessing the Three-Dimensions

Instructional materials support monitoring student progress in all three dimensions.

- Multiple and varied assessments allow students to demonstrate learning in all three dimensions including application of knowledge in performance tasks.
- Formative assessments, including teacher, self and peer assessments, are embedded throughout to inform instruction.
- Assessments are unbiased and elicit direct, observable evidence from all students.
- A phenomena or problem drives tasks, and information from the task is required to complete it.
- Rubrics and scoring guidelines are provided for interpreting student performance including sample student responses

Less of this:	**More** of this:
Checks for understanding elicit only a few student responses or rely primarily on group projects.	Individual student artifacts are used to measure student understanding of each dimension.
Only summative assessments that measure the end point of understanding are provided.	Formative assessments provide feedback to adjust instruction and inform students of their progress.
Assessments are primarily rote memorization of facts and terminology.	Assessments reflect application of all three dimensions including tasks that are driven by phenomena or problems.
Only multiple-choice tests are given.	Multiple measures and types of assessment are used throughout.

Examples of Evidence:

- ◊ As students are engaged in a performance task in unit 3, lesson 2, there are indicators for teachers to look for and information about possible responses. This information is embedded in the lesson.
- ◊ In unit 1, there are two performance assessments, peer feedback throughout, exits slips, a summative assessment, and a prewrite.
- ◊ Individual student learning is assessed using written work that answers the driving question of the unit. (Earth Science, p. 76)

Specific Evidence from Materials
Teacher assesses with focus question Embedded Assessment (summary page of assessments) Say It, Write It, See It, Hear It Assess by observing and questioning Teaching notes within a lesson like: Take this beyond a yes/no answer.

To what extent do the materials support Criterion 2A? Include your reasoning.

Assessments are embedded as part of every lesson. They are authentic and require careful observation.

Criterion 2B: Instructional Experiences

Instructional materials support equitable access to science knowledge and practice for all students.

- Students engage with direct (preferably first-hand), shared experiences that are relevant and authentic, serve as the basis for learning and meet the developmental needs of elementary students.
- Students' questions, prior experiences and diverse backgrounds related to the phenomenon or problem drive learning.
- Materials provide an opportunity to learn by allowing for the development of scientific understandings over time using multiple modalities.
- Materials provide opportunities for students to make connections to and explore the natural world outside the classroom.

Less of this:	**More** of this:
The lesson focuses on a topic that some students have experienced.	Direct experiences in the classroom provide access and equity for all students.
Student questions and prior experiences are not connected to the learning.	Materials provide supports for connecting students' own questions to the targeted learning.
Students read about what others have done.	Students learn through concrete experiences.
Only one or two modalities are used.	Multiple modalities are used throughout each instructional segment.

Examples of Evidence:

- ◊ Students develop physical models of a landfill as open and closed systems to observe during the 5th grade garbage unit.
- ◊ Students identify components of garbage disposal in their homes and communities which connects the phenomena that started the unit.
- ◊ Students conduct a first-hand investigation of erosion and deposition using a stream table, observe time-lapse videos of landslides, engage in a virtual investigation, read accounts of earth changes by wind and record changes to the playground after a snow event in the 4th grade earth science unit.
- ◊ Students raise trout from eggs in the classroom and make observations over time as part of their study of traits in the life science unit.

Specific Evidence from Materials
One of the keys to opening young minds to the natural world is the development of their powers of observation—not only the acuity of the sensory organs, but the disposition of mind for finding things out.

Center and notebooks are a part of almost every lesson

Animals are compared in pairs

First hand experiences, close-up pictures, videos

Isopod race sounds very engaging and relavant

Active engagement at the center of learning design pg. 8

Learning by experience

To what extent do the materials support Criterion 2B? Include your reasoning.
Each unit has students actively discovering and experiencing science. This criteria is a strength of this program. The experiences are great because they are engaging, but not over the top. They are real and connect to the real world instead of over-the-top simulations.

Criterion 2C: Student Sense-making

Instructional materials support equitable access to science knowledge and practice for all students.

- Materials support student sense-making at both an individual and group level.
- Classroom discourse focuses on expressing and clarifying student reasoning with opportunities for students to share ideas and feedback with each other that supports the iterative and collaborative co-construction of explanations.
- Materials include supports for oral and written language processing to involve students in scientific discourse for sense-making including a language-in-use approach.

Less of this:	**More** of this:
The teacher tells students what they need to know.	Students figure out explanations through classroom discourse with each other.
The teacher calls on a few students to share reasoning.	All students have the opportunity to share their thinking orally or in writing.
The focus is only on getting the "right" answer.	Sense-making begins with initial student ideas that progress in sophistication.
Vocabulary is front-loaded. All students are provided with sentence frames.	Specialized vocabulary is embedded in the instructional sequence with multiple opportunities to use and development over time. Writing supports are differentiated.

Examples of Evidence:

- ◊ 5th grade students develop models of how scents travel that are refined over the course of a three weeks using a combination of visual and written language providing multiple opportunities to develop precise vocabulary in the physical science unit.
- ◊ 3rd grade students answer questions in their notebook individually using pictures and words to explain their initial ideas about how static electricity works and have the opportunity to revise this after discussing with a peer and the whole class in the physical science unit.
- ◊ The teacher facilitates a class discussion using a word wall where kindergarten students share observations with a shoulder partner and the whole group about the kinds of things in their homes to figure out that the things we need come from nature.
- ◊ Suggested sentence frames are included to support oral and written responses when needed with the goal of independence.

Specific Evidence from Materials
Sense-making discussion figuration in Fall 2020 guidelines Guiding questions provided

A good way to draw young students into a subject is by asking questions, rather than issuing instructions. The student inquiry into fish might start with "Boys and girls, look what we have for our classroom. Fish! What are they doing? Where do you think we should put the aquarium?" As interest wanes, a new item in the aquarium and new questions can rekindle interest. Representational materials (books) provide excellent enrichment for young students *after* they have had firsthand experiences.

Center and notebooks are a part of almost every lesson

Say It, Write It, See It, Hear It

Very clear guiding questions for each investigation

To what extent do the materials support Criterion 2C? Include your reasoning.
There is evidence of sense making in each lesson of the unit. Students are working with each other on most occasions with the focus on building understanding through discourse. This is a strength of the program.

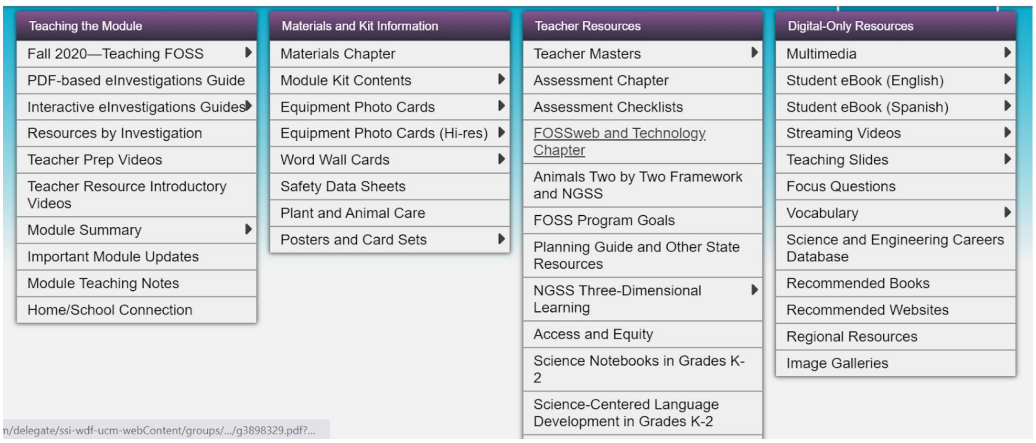
Criterion 2D: Teacher Supports

Instructional materials support teacher planning and instruction.

- Materials include background knowledge in both science content and pedagogy and student preconceptions.
- Materials have clear and concise instructional directions and connections to the standards.
- Materials provide guidance to support differentiated instruction, extra support and extensions at the appropriate level for a broad range of learners.
- Materials include professional learning and additional instructional planning resources.
- Materials have supports for families to extend learning and offers suggestions for how to help their student(s) at home.

Examples of Evidence:

- ◊ Information prior to lessons gives teachers things to except that students may already know in unit 1 p.12 in addition to how their understandings will build.
- ◊ 1st grade students have a choice to investigate different variables related to shadows, and suggestions are included as well as extensions to do at home. (Light unit, p. 40)
- ◊ The assessments include recommendations for additional supports when students don't meet expectations. "Students may struggle to articulate that scientists look back at the data they collect to look for patterns and to draw conclusions about phenomena. One way to support them in this thinking might be to share an anecdote such as, "When I was growing up, my mom used to measure my height by marking it on the wall in the pantry. When I look back at those marks, I notice patterns, like that I grew faster between the ages of 5 and 8 than I did when I was older."" (p.14)
- ◊ Students make observations of the sky with their families, looking for patterns over time. Families are provided with background information on how to record observations and what patterns to expect.

Specific Evidence from Materials

Easy organization Synchronous and Asynchronous lessons Module Navigation Matrix

Teacher Prep Videos
Teacher Resource Introduction
240 pages in Teacher manual
Reading in Science Resources
Word Wall
Assessment Checklist
Find the Parent Game- engaging and interactive
E-book- immersive reader, bolded words
Teaching slides in PPT.
Vocabulary- english and spanish with or without definitions
Module updates
Sense-making posters
Interactive eInvestigations book- clickable links, easy to manuver between investigations.

Easy to follow 5-part lesson with time recommendation by each part (about 35-60 minutes per part)
Background information for the teacher

Teacher background of content p. 34

List of materials in each box- labeled

Very clear guiding questions for each investigation

Teaching notes within a lesson like: Take this beyond a yes/no answer.

Scheduling the module- sample

To what extent do the materials support Criterion 2D? Include your reasoning.
There's so much available. I think this part may be overwhelming for teachers.

Category 3: Student Materials

Criterion 3A: Program Design

Instructional materials represent a comprehensive K-5 core program.

- Materials provide instruction that correlates to our recommended instructional minutes for science.
- Materials are available in both English and Spanish.
- Graphic organizers and templates for science notebooks are included.
- Teacher and student materials have resources both in print and online.
- Multimedia supports are included such as videos, tutorials and simulations and when appropriate reflect the diversity of our students and society in a culturally responsive manner including different genders and sexual orientations, from many cultures and nations, both contemporary and historical.
- Technology options are appropriate for both classroom and home use possibly including translation capabilities.

Examples of Evidence:

◊ There are four units, each representing nine weeks of instruction at 180 minutes a week. This is short of our recommended minutes of 240 minutes a week for 5th grade.

◊ There are 132 60-min lessons for the whole year. This correlates to our recommended instructional minutes of 220 minutes per week for grades K-2. (3-4 60-min lessons per week)

Specific Evidence from Materials
Obvious, clear connection to Standards • **LS1.A: Structure and function** *How do the structures of organisms enable life's functions?* [All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and see, find, and take in food, water, and air. Plants also have different parts that help them survive, grow, and produce more plants.] • **LS1.C: Organization for matter and energy flow in organisms** *How do organisms obtain and use the matter and energy they need to live and grow?* [All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow.] ***The following NGSS kindergarten performance expectation for LS1 is derived from the Framework disciplinary core ideas above.*** • **K-LS1-1.** Use observations to describe patterns of what plants and animals (including humans) need to survive. [Clarification Statement: Examples of patterns could include that animals need to take in food but plants do not; the different kinds of food needed by different types of animals; the requirement of plants to have light; and that all living things need water.] The **FOSS Trees and Weather Module** addresses this performance expectation with a focus on plants. Family Home Note Online Activities; ebooks

NOTE

The following student-facing resources are available in Spanish on FOSSweb using a teacher's class page.

- Vocabulary
- Equipment photo cards
- eBooks
- Select streaming videos
- Home/school connections
- Audio books

Access, Equity and EL supports

Teaching Children about Wood

Part 1: Observing Wood

Part 2: Wood and Water

Part 3: Testing a Raft

Part 4: Sanding Wood

Part 5: Sawdust and Shavings

Part 6: Making Particleboard

Part 7: Making Plywood

Interdisciplinary Extensions

Taking Science Outdoors

GOALS AND OBJECTIVES

The three program goals set down 20 years ago still serve FOSS well. They are: (1) scientific literacy for all students, (2) instructional efficiency and support for teachers, and (3) systemic reform.

The march into the schoolyard has three objectives that relate to the goal for students. First, the outdoor activities **continue and extend the learning** that starts in the classroom. The outdoor activities provide more experience with the content and additional opportunities to practice skills and techniques developed in the

To what extent do the materials support Criterion 3A? Include your reasoning.
Each unit is thoughtful and works within a greater system. There are statements throughout that make it obvious that the program has been designed around core values.

Criterion 3B: Science Equipment

Instructional materials include hands-on materials and equipment that support three-dimensional learning.

- Enough materials are included to allow students to do the investigations themselves.
- Materials are of a quality that will last through many uses.
- Materials include the tools necessary to make observations and measurements and conduct investigations.

Examples of Evidence:

- ◊ There are enough thermometers, graduated cylinders, balances, magnifying glasses and measuring tapes for a whole class to use in small groups.
- ◊ Everything is included to engage in the lessons except for things that would already be found in the classroom like tape and colored pencils.

Specific Evidence from Materials
Five Boxes and five teacher manual sets Big books Published book (DK Eyewitness Tons of materials that will be reusable over many years Engaging tools and materials Multiple sets of things (student microscopes) Teacher Resources: Planning guide, science notebooks, science centered language development, taking Foss outdoors Student book Worksheet book Teacher Read aloud book (bit small) Science materials Foss web Front-opening drawers Picture of materials Kit inventory list- by investigation Shared items Materials supplied by teacher- teacher items that they'd already have (supplies)

To what extent do the materials support Criterion 3B? Include your reasoning.
There is more than enough high-quality materials. My only concern is material storage.

Criterion 3C: Reading Materials

Instructional materials include grade-appropriate texts that support three-dimensional learning.

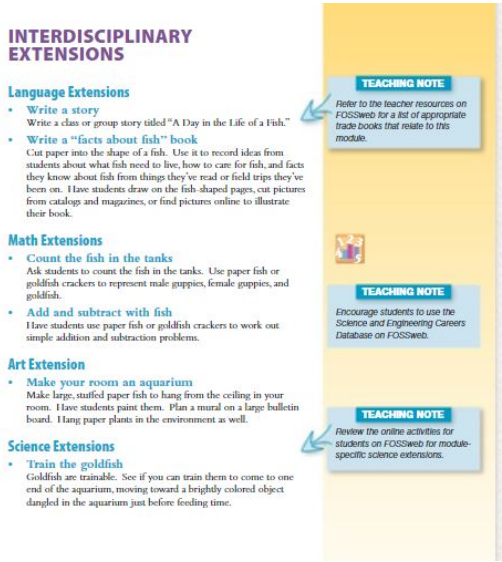
- A range of text types and genres, both print and online, are embedded in learning experiences.
- Texts support context-specific academic vocabulary.
- Materials reflect the diversity of our students and society in a culturally responsive manner including different genders and sexual orientations, from many cultures and nations, both contemporary and historical.
- Materials include supports for reading comprehension for a variety of student needs including high-quality questions.

Examples of Evidence:

◊ Texts include an interview of Sylvia Earle and profiles of Chien Shiung Wu and Benjamin Banneker. These highlight the connections to the science students are learning. Pictures of scientists working in the field represent the diversity of our students.

◊ Cultural myths about the sun and stars are included in the earth/space science unit.

◊ Vocabulary is highlighted in the reading that follows a concrete experience where the vocabulary is first introduced.

Specific Evidence from Materials
Informational text and digital tools to gather evidence Students provide explanations in the science notebooks    INTERDISCIPLINARY EXTENSIONS Language Extensions • Write a story Write a class or group story titled "A Day in the Life of a Fish." • Write a "facts about fish" book Cut paper into the shape of a fish. Use it to record ideas from students about what fish need to live, how to care for fish, and facts they know about fish from things they've read or field trips they've been on. Have students draw on the fish-shaped pages, cut pictures from catalogs and magazines, or find pictures online to illustrate their book. Math Extensions • Count the fish in the tanks Ask students to count the fish in the tanks. Use paper fish or goldfish crackers to represent male guppies, female guppies, and goldfish. • Add and subtract with fish Have students use paper fish or goldfish crackers to work out simple addition and subtraction problems. Art Extension • Make your room an aquarium Make large, stuffed paper fish to hang from the ceiling in your room. Have students paint them. Plan a mural on a large bulletin board. Hang paper plants in the environment as well. Science Extensions • Train the goldfish Goldfish are trainable. See if you can train them to come to one end of the aquarium, moving toward a brightly colored object dangled in the aquarium just before feeding time. TEACHING NOTE Refer to the teacher resources on FOSSweb for a list of appropriate trade books that relate to this module. TEACHING NOTE Encourage students to use the Science and Engineering Careers Database on FOSSweb. TEACHING NOTE Review the online activities for students on FOSSweb for module-specific science extensions. K-2 Notebook Support guidance Science-Centered Language \

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Here are two samples of writing frames.

Living Structures

Title: ____

(Identify) The parts of the ____ I observe are the ____ , ____ , and the ____ .

(Describe) The ____ is for ____ . The ____ is for ____ .

(Explain) Together, they ____ .

(Example) This drawing shows ____ .

Explanations

Title: ____

I want to explain why (how) ____ .

The reason is ____ .

Another reason is that ____.

I know this because ____.

TEACHING NOTE

When students use organisms for scientific informational writing, have a conversation about the difference between fiction and nonfiction, e.g., animals don't talk or drive cars.

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Language function	Language objectives for writing in notebooks	Language forms, structures, and scaffolds for writing
Notebook component—data acquisition		
Describe	Write narratives to develop real experience; use descriptive details and clear event sequencing. (CCSS.ELA W3)	I observed ____. When I touch the ____, I feel ____. The ____ has ____. I noticed ____. It feels ____. It smells ____. It sounds ____. It reminds me of ____, because ____.

This sample from Table 1 shows how language functions can be developed and applied when writing in science notebooks.

At Home Activities
Science and ELA Connections on the sidebar p. 113

To what extent do the materials support Criterion 1A? Include your reasoning.
Evidence of reading materials and supports. I appreciate the graphic on language function, structures and scaffolds. This really enhanced learning for all children.

Referenced, adapted and formatted from the following documents:

Achieve, Inc. (2016). EQuIP Rubric, Version 3.0.

Achieve, Inc. (2018). Science Task Prescreen.

Achieve, Inc. (2016). Using Phenomena in NGSS-Designed Lessons and Units.

Achieve, Inc. (2017). Primary Evaluation of Essential Criteria (PEEC) for Next Generation Science Standards Instructional Materials Design.

Brennan et al. (2017) *Priority Features of NGSS-Aligned Instructional Materials: Recommendations for Publishers, Reviewers and Educators* [White paper].

BSCS (2017). Guidelines for the Evaluation of Instructional Materials in Science.

BSCS Science Learning (2018). NextGen TIME

MacDonald et al. (2020). *Design Principles for Engaging Multilingual Learners in Three-Dimensional Science* Wisconsin Center for Education Research (WCER) Working Paper No. 2020-1. https://wcer.wisc.edu/docs/working-papers/WCER_Working_Paper_No_2020_1.pdf

National Academies of Sciences, Engineering, and Medicine (NASEM) (2017). *Seeing Students Learn Science: Integrating Assessment and Instruction in the Classroom.* Washington, DC: The National Academies Press.

National Research Council (NRC) (2012). *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas.* Washington, DC: The National Academies Press.

NGSS Lead States (2013). *Next Generation Science Standards: For States, By States.* Washington, DC: The National Academies Press.

Nolan, C. (2015). *Getting their hands dirty: Engaging learners in authentic science practices outside the classroom* (Practice Brief No. 20). STEM Teaching Tools.

Washoe County School District Needs Evaluation

Washoe County School District. (2020). Request for Instructional Material Submission RFP 2020A.