

## Gr. 1 curriculum roadmap

### Physical science

| Module Title<br>Investigation #                         | Focus Question  | Description  | Objective(s)   | # of Sessions | Vocabulary                                      | IN #   | Standard Text  | Cross Cutting<br>Concept(s) | Practices  | Notes  |
|---|---|--|--|---------------|---|--------|--|-----------------------------|--|--|
| <b>STEM in Action: Sound Bite Explore Sound</b>         | <b>What is a vibration?</b>                                 | Students will explore sound vibrations through air, water, and solids.                         | 1. Vibrating materials can make sound. 2. Sound can make materials vibrate. 3. Sound vibrations can  | 1             | vibration                                       | 1.PS.3 | Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can                         | Cause and effect            | Planning, carrying out investigations, Developing and using models, Analyzing and interpreting data                            | pg. 6 TG   |
| <b>STEM in Action: Sound Bite Explore String Phones</b> | <b>How does sound move through a string phone?</b>          | Students will build string phones that will allow three people to talk and listen at one time. | 1. Sound vibrations from a mouth make the air in the cup vibrate. 2. The vibrations in the air make the bottom of the cup vibrate. 3. The vibrations of the cup move into the string. 4. Vibrations in the string make the bottom of | 1             | vibration kite string                           | 1.PS.3 | Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. | Cause and effect            | Planning and carrying out investigations, Analyzing and interpreting data, Obtaining, evaluating and communicating information | Engage this lesson with "Sounds from Strings" pg. 7 TG   |
| <b>STEM in Action: Sound Bite Test Strings</b>          | <b>Which kind of string will carry sound the best? Why?</b> | Students will test three different string phones.  | 1. Compare the clarity of sound. 2. Compare the loudness of sound.   | 2             | sound meter decibel clicker yarn plastic string | 1.PS.3 | Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. | Cause and effect            | Planning and carrying out investigations, Developing and using models, Using mathematics and computational thinking,           | Engage this lesson with "Learn About Sound" on pg. 11 TG |

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|--|--|--|---|---------------|---------------------------------------|--------|--|-----------------------------|--|--|
| <b>STEM in Action: Sound Bite Test Cups</b>                | <b>Which kind of cup sends and receives sound the best? Why?</b> | Students will test three different cups for string phones using kite string only.  | 1. Compare the clarity of sound.<br>2. Compare the loudness of sound.   | 2             | foam plastic                          | 1.PS.3 | Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. | Cause and effect            | Planning and carrying out investigations, Developing and using models, Using mathematics and computational thinking, | pg. 13 TG  |
| <b>STEM in Action: Shadow Box Theater Light and Shadow</b> | <b>What happens when light strikes an object?</b>                | Students will investigate different materials and what happens when the materials are placed in the path of a beam of light. | 1. All colors and clear details can be seen through clear plastic. 2. Shapes or shadows can be seen through the wax paper. 3. Nothing | 1             | transparent translucent opaque shadow | 1.PS.4 | Make observations to collect evidence and explain that objects can be seen only when illuminated.                                      | Cause and effect            | Planning and carrying out investigations, Developing and using models, Using mathematics and computational thinking, | pg. 6 TG   |
| <b>STEM in Action: Shadow Box Theater Explore Shadows</b>  | <b>Do colored objects make colored shadows?</b>                  | Students will shine a flashlight on a red circle and a yellow circle to determine if shadows are colored.                    | 1. A shadow itself does not have color-it is the absence of light. 2. All shadows will be the same color.                             | 1             |                                       | 1.PS.4 | Make observations to collect evidence and explain that objects can be seen only when illuminated.                                      | Cause and effect            | Planning and carrying out investigations, Developing and using models, Using mathematics and computational thinking, | Engage this lesson with "Goals for Your Scenery" pg. 7 TG Lesson is pg. 8 TG |

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|---|--|--|--|---------------|---|--------|---|-----------------------------|--|-----------|
| <b>STEM in Action:<br/>Shadow Box<br/>Theater<br/>Explore<br/>Shadows<br/>(continued)</b> | <b>How did the<br/>size and shape<br/>of the shadow<br/>change?</b>                      | Students will move objects back and forth in front of the light and observe the shadows. | 1. The size of a shadow is determined by the distance of the object from the light source.   | 1             | size  | 1.PS.4 | Make observations to collect evidence and explain that objects can be seen only when illuminated. | Cause and effect            | Planning and carrying out investigations, Developing and using models, Using mathematics and computational thinking, | pg. 9 TG  |
| <b>STEM in Action:<br/>Shadow Box<br/>Theater<br/>Make Shapes</b>                         | <b>How can you<br/>put different<br/>shapes<br/>together to<br/>make new<br/>shapes?</b> | Students will use shape tiles to compose new shapes.                                     | 1. New shapes can be made by combining shapes. 2. If an object is held flat against a screen the shadow will not show how the tiles overlap. | 1             | shape<br>triangle<br>square<br>rectangle<br>hexagon<br>circle | 1.PS.4 | Make observations to collect evidence and explain that objects can be seen only when illuminated. | Cause and effect            | Planning and carrying out investigations, Developing and using models, Using mathematics and computational thinking, | pg. 10 TG |

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| Module Title<br>Investigation #  | Focus Question  | Description   | Objective(s)                        | # of Sessions | Vocabulary              | IN #    | Standard Text  | Cross Cutting<br>Concept(s) | Practices      | Notes    |
|--|---|---|-------------------------------------|---------------|-------------------------|---------|--|-----------------------------|----------------|----------|
| Module Title:<br><b>STEM in<br/>Action: Sound<br/>Bite Engineers<br/>Needed!</b> | <b>How could you<br/>talk with your<br/>friend if you<br/>did not have a<br/>phone?</b> | Students will<br>define the<br>problem of how<br>to physically<br>communicate<br>between two<br>separate<br>spaces. | 1. Define a<br>problem to<br>solve. | 1             | engineer<br>communicate | K-2.E.1 | K-2.E.1 Pose<br>questions,<br>make<br>observations,<br>and obtain<br>information<br>about a<br>situation<br>people want to<br>change. Use<br>this data to<br>define a simple<br>problem that<br>can be solved<br>through the<br>construction of<br>a new or<br>improved<br>object or tool. | Engineering                 | Pose questions | pg. 4 TG |

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**Earth science**

**Foss Pebbles, Sand, and Silt**

| Investigation # | Focus Question                                      | Description  | Objective(s)   | # of Sessions | Vocabulary                              | IN #    | Standard Text  | Cross Cutting Concept(s) | Practices   | Notes   |
|-----------------|---|--|--|---------------|---|---------|--|--------------------------|---|---|
|                 |   |  |  |               |   | 1.ESS.1 | Use observations of the sun, moon, and stars to describe patterns that can be predicted.   | Patterns                 |   | There are no module investigations for this. Resources from Foss Day and Night could be used. |
| <b>1 part 1</b> | <b>What happens when rocks rub together?</b>        | Students investigate and sort a set of six rocks. They gather information about the rocks and simulate weathering. | 1. People who study rocks are called geologists. 2. Weathering causes rocks to break into smaller pieces. 3. The small pieces of rock that feel rough and gritty are sand. | 1             | geologist<br>rock<br>weathering<br>sand | 1.ESS.2 | Observe and compare properties of sand, clay, silt, and organic matter. Look for evidence of sand, clay, silt, and organic matter as components of soil samples. | Cause and Effect         | Planning and carrying out investigations. Obtaining, evaluating and communicating information |   |
| <b>1 part 2</b> | <b>What happens when rocks are placed in water?</b> | Students wash their rocks to see how they change when they get wet and to see what happens to the wash water.      | 1. Rocks can be hard, soft, light, dark, colored. 2. When rocks are placed in water they change colors or air bubbles come out.  | 2             | Basalt<br>Tuff<br>Scoria<br>residue     | 1.ESS.2 | Observe and compare properties of sand, clay, silt, and organic matter. Look for evidence of sand, clay, silt, and organic matter as components of soil samples. | Cause and Effect         | Planning and carrying out investigations. Obtaining, evaluating and communicating information | Addresses 1.PS.2 as well  |

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**Foss Pebbles, Sand, and Silt**

| Investigation # | Focus Question                                      | Description   | Objective(s)  | # of Sessions | Vocabulary                                | IN #    | Standard Text  | Cross Cutting Concept(s) | Practices   | Notes                    |
|-----------------|---|---|---|---------------|---|---------|--|--------------------------|---|--------------------------|
| 1 part 3        | <b>How are river rocks the same?</b>                | Students will observe and sort river rocks by their properties.   | 1. Matter can be sorted by size, shape, color, and texture. | 1             | sort<br>size<br>shape<br>color<br>texture | 1.ESS.3 | Observe a variety of soil samples and describe in words and pictures the soil properties in terms of color, particle size and shape, texture, and recognizable living and nonliving items. | Energy and Matter        | Planning and carrying out investigations. Obtaining, evaluating and communicating information. Using scientific tools | Addresses 1.PS.1 as well |
| 1 part 4        | <b>What are the properties of schoolyard rocks?</b> | Students will collect, observe, and sort schoolyard rocks by their properties.  | 1. Matter can be sorted by size, shape, color, and texture. | 1             | sort<br>size<br>shape<br>color<br>texture | 1.ESS.3 | Observe a variety of soil samples and describe in words and pictures the soil properties in terms of color, particle size and shape, texture, and recognizable living and nonliving items. | Energy and Matter        | Planning and carrying out investigations. Obtaining, evaluating and communicating information. Using scientific tools | Addresses 1.PS.1 as well |
| 2 part 1        | <b>How can rocks be separated by size?</b>          | Students separate a river-rock mixture, using a set of three screens. They discover large pebbles, small pebbles, large gravel, small gravel, and sand. | 1. Screens help separate earth materials.                   | 2             | pebbles<br>gravel<br>sand<br>screens      | 1.ESS.3 | Observe a variety of soil samples and describe in words and pictures the soil properties in terms of color, particle size and shape, texture, and recognizable living and nonliving items. | Energy and Matter        | Planning and carrying out investigations. Obtaining, evaluating and communicating information. Using scientific tools |                          |

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| Investigation # | Focus Question                                   | Description  | Objective(s)  | # of Sessions | Vocabulary | IN #    | Standard Text  | Cross Cutting Concept(s) | Practices   | Notes |
|-----------------|--|--|---|---------------|------------|---------|--|--------------------------|---|-------|
| 2 part 2        | <b>How else can rocks be sorted by size?</b>     | Students use representations of screens to separate rock particles into sand, gravel, and pebbles. | 1. Pebbles and gravel can be sorted into smaller particles. | 1             | particle   | 1.ESS.3 | Observe a variety of soil samples and describe in words and pictures the soil properties in terms of color, particle size and shape, texture, and recognizable living and nonliving items. | Energy and Matter        | Planning and carrying out investigations. Obtaining, evaluating and communicating information. Using scientific tools |       |
| 2 part 4        | <b>What earth material is smaller than silt?</b> | Students investigate the properties of the smallest rock particles, clay.                          | 1. Clay is made of pieces of rock, smaller than silt.       | 2-3           | clay       | 1.ESS.3 | Observe a variety of soil samples and describe in words and pictures the soil properties in terms of color, particle size and shape, texture, and recognizable living and nonliving items. | Energy and Matter        | Planning and carrying out investigations. Obtaining, evaluating and communicating information. Using scientific tools |       |

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| Investigation # | Focus Question                            | Description   | Objective(s)   | # of Sessions | Vocabulary  | IN #    | Standard Text  | Cross Cutting Concept(s) | Practices  | Notes |
|-----------------|---|---|--|---------------|---|---------|--|--------------------------|--|-------|
| 3 part 1        | <b>How do people use earth materials?</b> | Students learn how people use rocks as natural resources to construct objects to make useful materials.         | 1. Sand is used to make sidewalks. 2. Pebbles and gravel make asphalt. 3. Bricks are made of clay. 4. Concrete is a mixture of gravel, sand, and water. 5. Mortar is made of gravel, sand, and cement. | 1             | sidewalk<br>asphalt<br>bricks<br>concrete<br>mortar<br>quarry | 1.ESS.3 | Observe a variety of soil samples and describe in words and pictures the soil properties in terms of color, particle size and shape, texture, and recognizable living and nonliving items. | Energy and Matter        | Planning and carrying out investigations. Obtaining, evaluating and communicating information. |       |
| 3 part 2        | <b>What does sand do for sandpaper?</b>   | Students observe sandpaper and compare it to sand. They make and compare rubbings of three grades of sandpaper. | 1. Different sizes of sand are used to make sandpaper coarse, medium, or fine.   | 1             | sandpaper<br>coarse<br>medium<br>fine                         | 1.ESS.3 | Observe a variety of soil samples and describe in words and pictures the soil properties in terms of color, particle size and shape, texture, and recognizable living and nonliving items. | Energy and Matter        | Planning and carrying out investigations. Obtaining, evaluating and communicating information. |       |



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**Foss Pebbles, Sand, and Silt**

| Investigation # | Focus Question                     | Description  | Objective(s)  | # of Sessions | Vocabulary                    | IN #    | Standard Text  | Cross Cutting Concept(s) | Practices  | Notes |
|-----------------|------------------------------------|--|---|---------------|-------------------------------|---------|--|--------------------------|--|-------|
| 3 part 3        | <b>What can be made with sand?</b> | Students mix sand with a cornstarch matrix to make durable sand sculptures.                  | 1. A matrix is a material that holds particles or materials together. 2. The sand and matrix mixture holds its shape and hardens when it dries. | 1             | harden<br>matrix<br>sculpture | 1.ESS.3 | Observe a variety of soil samples and describe in words and pictures the soil properties in terms of color, particle size and shape, texture, and recognizable living and nonliving items. | Energy and Matter        | Planning and carrying out investigations. Obtaining, evaluating and communicating information. |       |
| 3 part 4        | <b>What can be made with clay?</b> | Students use clay to make beads or something decorative.                                     | 1. Clay sticks together when it is molded. 2. It hardens when it dries.   | 2             | mold                          | 1.ESS.3 | Observe a variety of soil samples and describe in words and pictures the soil properties in terms of color, particle size and shape, texture, and recognizable living and nonliving items. | Energy and Matter        | Planning and carrying out investigations. Obtaining, evaluating and communicating information. |       |
| 3 part 5        | <b>How are bricks made?</b>        | Students make adobe clay bricks with a mixture of clay, soil, dry grass or weeds, and water. | 1. Adobe bricks are made with clay and various earth materials.   | 2-3           | adobe brick                   | 1.ESS.3 | Observe a variety of soil samples and describe in words and pictures the soil properties in terms of color, particle size and shape, texture, and recognizable living and nonliving items. | Energy and Matter        | Planning and carrying out investigations. Obtaining, evaluating and communicating information. |       |

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| Investigation # | Focus Question              | Description   | Objective(s)   | # of Sessions | Vocabulary    | IN #    | Standard Text  | Cross Cutting Concept(s) | Practices  | Notes                    |
|-----------------|-----------------------------|---|--|---------------|---------------|---------|--|--------------------------|--|--------------------------|
| 4 part 1        | <b>What is soil?</b>        | Students put together and take apart soils. They are introduced to humus. They use screens to separate the homemade soil. They shake soil and water together in a vial and observe. | 1. Humus is decayed material from plants and animals. 2. The ingredients of soil are observed by mixing soil with water. 3. Soil is made from weathered rock and organic matter. | 3             | humus<br>soil | 1.ESS.3 | Observe a variety of soil samples and describe in words and pictures the soil properties in terms of color, particle size and shape, texture, and recognizable living and nonliving items. | Energy and Matter        | Planning and carrying out investigations. Obtaining, evaluating and communicating information. Using scientific tools. | Addresses 1.PS.2 as well |
| 4 part 2        | <b>How do soils differ?</b> | Students collect soil samples from the schoolyard. Students study their schoolyard samples.   | 1. Soils can be described by their properties. 2. Soils vary from place to place. 3. Soils differ in their ability to support plants.  | 3             |               | 1.ESS.3 | Observe a variety of soil samples and describe in words and pictures the soil properties in terms of color, particle size and shape, texture, and recognizable living and nonliving items. | Energy and Matter        | Planning and carrying out investigations. Obtaining, evaluating and communicating information. Using scientific tools. | Addresses 1.PS.2 as well |
|                 |                             |   |  |               |               | 1.ESS.4 | Develop solutions that could be implemented to reduce the impact of humans on the land, water, air, and/or other living things in the local environment.                                   |                          |  |                          |

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**Foss Pebbles, Sand, and Silt**

| Investigation #                       | Focus Question                | Description   | Objective(s)  | # of Sessions | Vocabulary                                | IN #   | Standard Text  | Cross Cutting Concept(s) | Practices   | Notes                   |
|---------------------------------------|-------------------------------|---|---|---------------|---|--------|--|--------------------------|---|-------------------------|
| Foss Pebbles, Sand, and Silt 1 part 3 | How are river rocks the same? | Students will observe and sort river rocks by their properties. | 1. Matter can be sorted by size, shape, color, and texture. | 1             | sort<br>size<br>shape<br>color<br>texture | 1.PS.1 | Characterize materials as solid, liquid, or gas and investigate their properties, record observations and explain the choices to others based on evidence. | Energy and Matter        | Planning and carrying out investigations. Obtaining, evaluating and communicating information. Using scientific tools | addresses "solids" only |

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**Module- FOSS Plants and Animals (Next Gen)**

| Investigation # | Focus Question   | Description   | Objectives   | # of sessions | Vocabulary  | IN Standard #   | IN Standard Text   | Cross Cutting  |  | Notes  |
|-----------------|--|---|--|---------------|---|---|--|--|--|--|
|                 |  |   |  |               |   |   |  | Concept  | Practices  |  |
| 1 Part 1        | <b>What happens to ryegrass and alfalfa seeds in moist soil?</b>       | Students plant a miniature lawn in a cup of soil—ryegrass seeds and alfalfa seeds. They draw, compare, and record the growth of the two plants over time. Students read that plants need water, air, sunlight, and space to grow. | Seeds are alive and grow into new plants. Seeds need water to begin growth.<br><br>Plants need water, air, nutrients, and space to grow.   | Active Inv. 2 | lawn, plants, ryegrass seeds, alfalfa, soil, sprout, light, fertilizer, nutrients | 1.LS.2,<br>1.LS.1   | Develop a model mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs. Explore how those external parts could solve a human problem. .1 Develop representations to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction and death. | Patterns,<br>Cause and Effect,<br>Structure and Function | Asking questions<br>Planning and carrying out investigations<br>Obtaining, evaluating, and communicating information   | Does not address animals or solving human problems |
| 1 Part 2        | <b>What happens to the grass and alfalfa plants after we mow them?</b> | After the two kinds of plants have grown tall, students cut the lawn plants to simulate mowing. They observe and make drawings of what happens to the two kinds of plants.  | Not all plants grow alike. There are variations in structures that serve the same function.<br><br>Some plants die if they are cut near the ground, while others continue to live. | Active Inv. 3 | observe, leaves, stems, blades, structures, functions, mow                        | 1.LS.2,<br>SEPS.1,<br>SEPS.3,<br>SEPS.4,<br>SEPS.6,<br>SEPS.7 | <b>Develop a model mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.</b> Explore how those external parts could solve a human problem.  | Patterns<br>Cause and effect<br>Structure and function   | Asking questions<br>Planning and carrying out investigations<br>Analyzing and interpreting data<br>Constructing explanations<br>Engaging in argument from evidence |  |

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Life Science**

**Module- FOSS Plants and Animals (Next Gen)**

| Investigation # | Focus Question                     | Description  | Objectives   | # of sessions | Vocabulary           | IN Standard #   | IN Standard Text   | Cross Cutting  |   | Notes |
|-----------------|------------------------------------|--|--|---------------|----------------------|---|--|--|---|-------|
|                 |                                    |  |  |               |                      |   |  | Concept  | Practices   |       |
| 1 Part 3        | <b>How does a wheat seed grow?</b> | Students plant seeds of an important grain: wheat. The wheat is carefully positioned in transparent straws with pieces of paper towel to provide support and water to the seeds. Students observe what happens to the plants and record changes by drawing pictures and making bar graphs. | Wheat and other cereals that we eat come from seeds called grains.<br><br>Seeds are alive and grow into new plants. Seeds need water to begin growth.<br><br>Plants have different structures that function in growth and survival. Plant roots take in water and nutrients, and leaves make | Active Inv. 4 | grains, wheat, roots | 1.LS.2,<br>1.LS.3<br>SEPS.1,<br>SEPS.2,<br>SEPS.3,<br>SEPS.4,<br>SEPS.5,<br>SEPS.6,<br>SEPS.8 | Develop a model mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs. Explore how those external parts could solve a human problem. .3Make observations of plants ad animals to compare the divesity of life in different habitats. | Patterns,<br>Cause and Effect,<br>Structure and Function | Asking questions<br>Developing and using models<br>Planning and carrying out investigations<br>Analyzing and interpreting data<br>Using mathematics and computational thinking<br>Constructing explanations<br>Obtaining, evaluating, and communicating information |       |

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**Module- FOSS Plants and Animals (Next Gen)**

| Investigation # | Focus Question   | Description   | Objectives   | # of sessions         | Vocabulary | IN Standard #                  | IN Standard Text  | Cross Cutting                                      |   | Notes              |
|-----------------|--|---|--|-----------------------|------------|--------------------------------|---|--|---|--------------------|
|                 |  |   |  |                       |            |                                |   | Concept  | Practices   |                    |
| 1 Part 4        | <b>How many different kinds of plants live in an area of the schoolyard?</b> | Students explore the diversity of plants living in an area of the schoolyard. They work in pairs to collect leaf samples from a variety of plants. The class sorts the collected leaves by kind to come up with the number of different plants sampled. They look for differences between types of plants and variation in leaves of one kind of plant. They use media to look at variation in animals. | Not all plants grow alike. There are variations in structures that serve the same function.<br><br>Individuals of the same kind look similar but also vary in many ways (variation). | Active Inv. 1 Session | Reading 1  | 1.LS.3, SEPS.1, SEPS.4, SEPS.8 | Make observations of plants and animals to compare the diversity of life in different habitats. | Patterns, Cause and Effect, Structure and Function | Planning and carrying out investigations<br>Analyzing and interpreting data<br>Obtaining, evaluating, and communicating information | Important lesson t |

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**Module- FOSS Plants and Animals (Next Gen)**

| Investigation # | Focus Question                                      | Description   | Objectives  | # of sessions          | Vocabulary                   | IN Standard #                                  | IN Standard Text  | Cross Cutting  |  | Notes |
|-----------------|---|---|---|------------------------|------------------------------|--|---|--|--|-------|
|                 |   |   |   |                        |                              |  |   | Concept  | Practices  |       |
| 2 Part 1        | <b>How can we make a new plant from an old one?</b> | Students try to make new plants from the stems of mature plants. Each student works with a part of a plant—a stem, a leaf, or a stem and leaf. They put the parts into water and observe them over time. Students draw and describe in words what they observe. | Roots and leaves develop on stems at nodes.<br><br>Plants are living organisms that need water, air, nutrients, light, and space to grow. | Active Inv. 3 Sessions | node, cuttings               | 1.LS.2, SEPS.1, SEPS.3, SEPS.4, SEPS.6, SEPS.8 | <b>Develop a model mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.</b> Explore how those external parts could solve a human problem. | Patterns<br><br>Cause and effect<br><br>Structure and function | Asking questions<br>Planning and carrying out investigations<br>Analyzing and interpreting data<br>Constructing explanations<br>Obtaining, evaluating, and communicating information |       |
| 2 Part 2        | <b>What grows from the nodes of a potato?</b>       | Students cut white potatoes (modified stems) into pieces and plant them in soil. After 2–3 weeks, students observe the results and discuss the role of potato eyes in producing new plants.   | New plants can grow from the stems of mature plants.<br><br>Potatoes are underground stems; potato eyes are nodes where buds grow.        | Active Inv. 3          | potatoes, tubers, eyes, buds | 1.LS.1 , SEPS.1, SEPS.3, SEPS.8                | Develop representations to describe that organisms have <b>unique and diverse life cycles</b> but all have in common birth, growth, reproduction, and death.  | Patterns<br><br>Cause and effect<br><br>Structure and function | Asking questions<br>Planning and carrying out investigations<br>Obtaining, evaluating, and communicating information   |       |

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Life Science**

**Module- FOSS Plants and Animals (Next Gen)**

| Investigation # | Focus Question                            | Description   | Objectives  | # of sessions | Vocabulary | IN Standard | IN Standard Text       | Cross Cutting   |   | Notes  |  |
|-----------------|---|---|---|---------------|------------|-------------|------------------------|---|---|--|--|
|                 |   |   |   |               |            | #           |                        | Concept   | Practices   |  |  |
| 2 Part 3        | <b>How do we keep our cuttings alive?</b> | Students select the cuttings that show promise for developing into new plants and plant them in soil. | <p>New plants can grow from the stems of mature plants.</p> <p>Plants are living organisms that need water, air, nutrients, light, and space to grow.</p> | Active Inv. 1 | Session 2  | Assessme    | 1.LS.4, SEPS.3, SEPS.4 | <p>Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.</p> | <p>Patterns</p> <p>Cause and effect</p> <p>Structure and function</p> | <p>Asking questions</p> <p>Planning and carrying out investigations</p> <p>Analyzing and interpreting data</p> |  |



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**Module- FOSS Plants and Animals (Next Gen)**

| Investigation # | Focus Question  | Description   | Objectives  | # of sessions | Vocabulary                       | IN Standard                    | IN Standard Text   | Cross Cutting   |   | Notes  |
|-----------------|---|---|---|---------------|----------------------------------|--------------------------------|--|---|---|--|
|                 |   |   |   |               |                                  | #                              |  | Concept   | Practices   |  |
| 3 Part 1        | <b>What do plants need to live and grow in a terrarium?</b> | Students build a terrarium with soil and the seeds and plant cuttings from Investigations 1 and 2. They construct a map showing the location of the seeds and plants. Students review what plants need to live, and read about what animals need. | Plants and animals need food, water, air, and space; plants need sunlight to make food.<br><br>A terrarium is a model habitat where plants and animals live in soil.<br><br>A habitat is a place where plants and animals live. It provides what a plant or animal needs to live. | Active Inv. 1 | terrarium, map, map key, habitat | 1.LS.4, SEPS.3, SEPS.2, SEPS.8 | Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live. | Systems and system models<br><br>Structure and function | Planning and carrying out investigations<br><br>Developing and using models<br><br>Obtaining, evaluating, and communicating information | Reading portion is critical for applying learning to needs of animals. |

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**Module- FOSS Plants and Animals (Next Gen)**

| Investigation # | Focus Question                                      | Description   | Objectives  | # of sessions | Vocabulary      | IN Standard  | IN Standard Text   | Cross Cutting   |   | Notes |
|-----------------|---|---|---|---------------|-----------------|--|--|---|---|-------|
|                 |   |   |   |               |                 | #  |  | Concept   | Practices   |       |
| 3 Part 2        | <b>What do animals need to live in a terrarium?</b> | Students care for the terrarium and record changes they observe over time. They add food, water, shelter, and small animals such as isopods and snails collected from the schoolyard. Students review the concept of habitat, and read about different habitats around the world. | Plants and animals need food, water, air, and space.<br><br>Plants need water, air, space, and sunlight to make food.<br><br>There are many different habitats around the world.<br><br>Many changes take place in a terrarium habitat over time. | Active Inv. 2 | shelter, system | 1.LS.4, SEPS.1, SEPS.2, SEPS.3, SEPS.4, SEPS.6, SEPS.8 | Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live. | Systems and system models<br><br>Structure and function | Asking questions<br>Developing and using models<br>Planning and carrying out investigations<br>Analyzing and interpreting data<br>Constructing explanations<br>Obtaining, evaluating, and communicating information |       |

**Gr. 1 curriculum roadmap**  
**Life Science**

**Module- FOSS Plants and Animals (Next Gen)**

| Investigation # | Focus Question  | Description  | Objectives  | # of sessions | Vocabulary | IN Standard #                        | IN Standard Text   | Cross Cutting Concept                                     | Practices   | Notes |
|-----------------|---|--|---|---------------|------------|--------------------------------------|--|---|---|-------|
| 3 Part 3        | <b>What structures or behaviors do plants or animals have that help them live in their habitat?</b> | Students match plant and animal cards to various habitats. They learn that plants and animals have structures and behaviors that help them live in their habitat. They review the needs of living things and see how habitats provide for these needs. Students view a video that shows the differences between desert and rain forest habitats. | A habitat is a place where plants and animals live. It provides what a plant or animal needs to live.<br><br>Plants and animals have structures and behaviors that help them survive in different habitats.<br><br>Habitats can be wet, dry, cold, or hot. Different plants and animals are | Active Inv. 3 | predator   | 1.LS.2,1.LS.3, 1.LS.4 SEPS.3, SEPS.8 | Develop a model mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs. Explore how those external parts could solve a human problem. .3Make observations of plants ad animals to compare the divesity of life in different habitats. .4 Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live. . | "Systems and system models<br><br>Structure and function" | Constructing explanations<br>Obtaining, evaluating, and communicating information |       |

**Gr. 1 curriculum roadmap  
Life Science**

**Module- FOSS Plants and Animals (Next Gen)**

| Investigation # | Focus Question   | Description   | Objectives  | # of sessions         | Vocabulary | IN Standard #   | IN Standard Text   | Cross Cutting Concept                                     | Practices  | Notes |
|-----------------|--|---|---|-----------------------|------------|---|--|---|--|-------|
| 3 Part 4        | <b>How do the behaviors of squirrels help them survive the winter?</b> | Students engage in a simulation activity to investigate the food-storage strategies of two kinds of animals—red squirrels and gray squirrels. | Plants and animals habitats have features and behaviors that help them survive.<br><br>Animals have sensory structures that provide them with information about their surroundings.<br><br>Individuals of the same kind look similar but can vary in many ways. | Active Inv. 1 Session | Reading 1  | 1.LS.2,<br>1.LS.3,<br>SEPS.4,<br>SEPS.5,<br>SEPS.6,<br>SEPS.8 | Develop a model mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs. Explore how those external parts could solve a human problem. .3Make observations of plants and animals to compare the diversity of life in different habitats. | "Systems and system models<br><br>Structure and function" | Analyzing and interpreting data<br>Using mathematics and computational thinking<br>Constructing explanations<br>Obtaining, evaluating, and communicating information |       |

**Gr. 1 curriculum roadmap  
Life Science**

**Module- FOSS Plants and Animals (Next Gen)**

| Investigation # | Focus Question               | Description   | Objectives  | # of sessions | Vocabulary          | IN Standard #                          | IN Standard Text  | Cross Cutting Concept                                  | Practices  | Notes |
|-----------------|------------------------------|---|---|---------------|---------------------|--|---|--|--|-------|
| 4 Part 1        | <b>How does a bulb grow?</b> | Students observe garlic or onion bulbs and plant them in a cup with a bit of cotton to hold them in place. They observe the emergence of the roots and the shoot. | Plant bulbs are alive and grow new structures when provided with water. | Active Inv. 3 | bulb, onion, garlic | 1.LS.1, 1.LS.2, SEPS.3, SEPS.4, SEPS.6 | Develop representations to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. .2 Develop a model mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs. Explore how those external parts could solve a human problem. | Patterns<br>Cause and effect<br>Structure and function | Planning and carrying out investigations<br>Analyzing and interpreting data<br>Constructing explanations |       |

**Gr. 1 curriculum roadmap**  
**Life Science**

**Module- FOSS Plants and Animals (Next Gen)**

| Investigation # | Focus Question                                      | Description  | Objectives   | # of sessions | Vocabulary                  | IN Standard #          | IN Standard Text  | Cross Cutting Concept                                  | Practices   | Notes                                   |
|-----------------|---|--|--|---------------|-----------------------------|------------------------|---|--|---|---|
| 4 Part 2        | <b>What parts of the plant can grow new plants?</b> | Students investigate plants with edible roots—carrots and radishes. After observing the parts—leaves, stems, and roots—students cut the plants into three or four parts and plant them in vermiculite to see if they will produce new plants. After observing the changes for 2–3 weeks, students draw conclusions about the likelihood of producing new plants from parts that are usually found underground. | Some parts of plant roots will grow into new plants if they are provided with water. Other parts will not. | Active Inv. 2 | carrot, radish, vermiculite | 1.LS.2, SEPS.3, SEPS.6 | <b>Develop a model mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.</b> Explore how those external parts could solve a human problem. | Patterns<br>Cause and effect<br>Structure and function | Planning and carrying out investigations<br>Constructing explanations | Allow 2-3 weeks for plant observations. |

**Gr. 1 curriculum roadmap  
Life Science**

**Module- FOSS Plants and Animals (Next Gen)**

| Investigation # | Focus Question   | Description   | Objectives  | # of sessions | Vocabulary                            | IN Standard #                                | IN Standard Text   | Cross Cutting   |  | Notes  |
|-----------------|--|---|---|---------------|---------------------------------------|--|--|---|--|--|
|                 |  |   |   |               |                                       |  |  | Concept   | Practices  |  |
| 4 Part 3        | <p>How do the plants in the schoolyard compare to the plants studied in class?</p> <p>What do animal parents do to help their young survive?</p> | <p>Students adopt schoolyard plants to observe throughout the school year. They document their observations in their notebook and discuss the living and nonliving things in the plants' habitat. Students read and observe media about animals and their young. They discuss the patterns of behavior of parents and young that help the young to survive.</p> | <p>Plants grow and change. Plants can produce new plants in many ways.</p> <p>Adult animals can have young (offspring), and the young resemble their parents.</p> <p>In many kinds of animals, parents and the offspring engage in behaviors that help the offspring survive.</p> | Active Inv. 2 | living, non-living, offspring, parent | 1.LS.1,1.LS.2, 1.LS.4 SEPS.3, SEPS.6, SEPS.8 | <p>Develop representations to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. .2 Develop a model mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs. Explore how those external parts could solve a human problem. .4 Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.</p> | <p>Patterns</p> <p>Cause and effect</p> <p>Structure and function</p> | <p>Planning and carrying out investigations</p> <p>Constructing explanations</p> <p>Obtaining, evaluating, and communicating information</p> | <p>Extension: Match Parents and Offspring Note: This investigation involves observing schoolyard plants and as well as nearby biotic (insects and animals)and abiotic conditions throughout the school year.</p> |

## Gr. 1 curriculum roadmap

### Engineering

| Investigation #  | Focus Question | Description   | Objective(s)   | # of Sessions | Vocabulary                                | IN #    | Standard Text  | Cross Cutting Concept(s) | Practices  | Notes |
|--|----------------|---|--|---------------|---|---------|--|--------------------------|--|-------|
| <b>Module Title:</b><br><b>Picture Stem</b><br><b>Designing</b><br><b>Hamster</b><br><b>Habitats</b><br><b>Intro 1</b> | <b>What</b>    | Students will plan and build a habitat for their HEXBUG Nano with materials found around the classroom. After designing the habitat, they will share their designs with the class and time to redesign their habitat. | 1. Define the problem, criteria, and constraints. 2. Create a working definition of what an engineer is and what type of work they do. | 2             | engineer<br>design<br>criteria<br>failure | K-2.E.1 | K-2.E.1 Pose questions, make observations, and obtain information about a situation people want to change. Use this data to define a simple problem that can be solved through the construction of a new or improved object or tool. | Cause and effect         | Developing and using models, Engaging in argument from evidence, Obtaining and communicating information |       |



## Gr. 1 curriculum roadmap

### Engineering

| Investigation #  | Focus Question  | Description  | Objective(s)   | # of Sessions | Vocabulary | IN #    | Standard Text  | Cross Cutting Concept(s) | Practices  | Notes |
|--|---|--|--|---------------|------------|---------|--|--------------------------|--|-------|
| <b>Module Title:</b><br><b>Picture Stem</b><br><b>Designing</b><br><b>Hamster</b><br><b>Habitats</b><br><b>Intro 2</b> | <b>How can we</b><br><b>expand a</b><br><b>hamster</b><br><b>habitat?</b> | Students will be defining the problem through the engineering process. | 1. Define the problem, criteria, and constraints. 2. Create a working definition of what an engineer is and what type of work they do. | 1             | habitat    | K-2.E.1 | K-2.E.1 Pose questions, make observations, and obtain information about a situation people want to change. Use this data to define a simple problem that can be solved through the construction of a new or improved object or tool. | Cause and effect         | Developing and using models, Engaging in argument from evidence, Obtaining and communicating information |       |

## Gr. 1 curriculum roadmap

### Engineering

| Investigation #  | Focus Question                               | Description  | Objective(s)                                   | # of Sessions | Vocabulary      | IN #    | Standard Text  | Cross Cutting Concept(s)  | Practices   | Notes            |
|--|--|--|--|---------------|-----------------|---------|--|---------------------------|---|------------------|
| Picture STEM<br>Designing<br>Hamster<br>Habitats<br>1A | <b>What are the basic needs of hamsters?</b> | Students are introduced to hamsters and build background knowledge about hamster's lives in the wild and in captivity. | 1. Animals need food, water, air, and shelter. | 1             | need<br>habitat | K-2.E.1 | K-2.E.1 Pose questions, make observations, and obtain information about a situation people want to change. Use this data to define a simple problem that can be solved through the construction of a new or improved object or tool. | Systems and system models | Planning and carrying out investigations, Developing and using models, Engaging in argument from evidence | Addresses 1.LS.2 |

## Gr. 1 curriculum roadmap

### Engineering

| Investigation #  | Focus Question                                     | Description  | Objective(s)                                   | # of Sessions | Vocabulary             | IN #    | Standard Text  | Cross Cutting Concept(s)  | Practices   | Notes            |
|--|--|--|--|---------------|------------------------|---------|--|---------------------------|---|------------------|
| Picture STEM<br>Designing<br>Hamster<br>Habitats<br>1B | <b>What are the basic needs of hamsters? cont.</b> | Students review characteristics of hamsters and build background knowledge about hamster's lives in the wild and in captivity. | 1. Animals need food, water, air, and shelter. | 1             | characteristic habitat | K-2.E.1 | K-2.E.1 Pose questions, make observations, and obtain information about a situation people want to change. Use this data to define a simple problem that can be solved through the construction of a new or improved object or tool. | Systems and system models | Planning and carrying out investigations, Developing and using models, Engaging in argument from evidence | Addresses 1.LS.2 |

## Gr. 1 curriculum roadmap

### Engineering

| Investigation #  | Focus Question               | Description  | Objective(s)  | # of Sessions | Vocabulary   | IN #    | Standard Text  | Cross Cutting Concept(s) | Practices                                 | Notes |
|--|------------------------------|--|---|---------------|--|---------|--|--------------------------|---|-------|
| Picture STEM<br>Designing<br>Hamster<br>Habitats<br>3A | How can shapes be described? | Students learn the characteristics of basic shapes.  | 1. Triangle is a shape with three sides. 2. Quadrilateral is a shape with four sides. 3. Pentagon is a shape with five sides. 4. Square is a four-sided figure with all the sides equal. 5. Rectangle is a four sided figure with opposite sides equal. | 1             | triangle<br>quadrilateral<br>pentagon<br>square<br>rectangle | K-2.E.2 | Develop a simple sketch, drawing, or physical model to illustrate and investigate how the shape of an object helps it function as needed to solve an identified problem. | Patterns                 | Using models.<br>Computational practices. |       |
| Picture STEM<br>Designing<br>Hamster<br>Habitats<br>3B |                              | Students sort objects in a set of tangrams based upon the characteristics. Students work on translating and rotating these shapes to create tangram animals. | 1. Spatial reasoning. 2. Composing new shapes by combining, rotating, and sliding basic shapes together.  | 1             | rotate<br>slide  | K-2.E.2 | Develop a simple sketch, drawing, or physical model to illustrate and investigate how the shape of an object helps it function as needed to solve an identified problem. | Patterns                 | Using models.<br>Computational practices. |       |