

|  |  |
| --- | --- |
|  | 2022 - 2023  Elementary Science  Quick Guide  Grade 2 |

<http://elementary.dmschools.org>

<http://grading.dmschools.org>

<http://dmschools.org>

Grade 2: Year at a Glance

2nd

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Aug-Oct** | | **Oct-Jan** | | **Jan-March** | | **March-May** | |
| **Unit 1** | **Unit 2** | **Unit 3** | **Unit 4** | **Unit 5** | **Unit 6** | **Unit 7** | **Unit 8** |
| **SS** | **SS** | **Science** | **Science** | **Science** | **SS** | **SS** | **Science** |
| **EL Module 1: Schools and Community** | | **EL Module 2: Fossils Tell of Earth’s Changes** | | **EL Module 3: The Secret World of Pollination** | | **EL Module 4: Providing for Pollinators** | |
| Mapping Our Environment  **** | Services in Our Community  **** | Changes in Earth's Surface,  Land and Water  **** | Properties of Materials  Heating and Cooling | Properties of Materials  Heating and Cooling | Leadership and Cooperation | Wants and Needs  **** | Interactions of Plants and Animals,  Diversity of Life  **** |

** = STRONG alignment to EL materials**

|  |  |  |  |
| --- | --- | --- | --- |
| FOSS Kits  Topic Scales | **Solids and Liquids Foss Kit** | **Pebbles, Sand and Silt Foss Kit** | **Insects and Plants Kit** |
| **Properties of Materials** | Investigations 1, 2, 3, and 4 |  |  |
| **Heating and Cooling** | Investigations 3 and 4 |  |  |
| **Changes in Earth’s Surface** |  | Investigations 1, 2, and 4 |  |
| **Land and Water** |  | Investigations 2 and 4 |  |
| **Interactions of Plants and Animals** |  |  | Investigation 1,2, and 3 |
| **Diversity of Life** |  |  | Investigation 5 |

Below you will find a list resources to support the DMPS Science scales for your grade level. Each includes the scale (state standards) to be addressed.

The scale should always be your starting point for deciding what you will be offering for a learning experience. Think “what will I see students doing to show me they “get" this standard?” As a reminder the standards are written as “performance expectations” and include a Science Practice, a Core Idea, and a Crosscutting Concept, so it should be something the student does (is engaged in) and not merely a recall of information.

Below the scale is a “Big idea” statement to try to capture the essence of the scale. If this does not help you stick with the scale. The scale is the expected learning.

After the big idea you will find the specific FOSS materials that should give you a chance to capture evidence of the scale. FOSS is a very comprehensive program and it would be very challenging to do all parts of all of the investigations. That said, keep the scale in mind “which parts will best help my students learn this scale?”

The listed FOSS items in this guide have a tight alignment to the scale but you will need to know where your students are and what Investigations will best help them learn the scale. It may be necessary to build some additional knowledge by doing additional investigations and parts. You as the teacher always have the freedom to do this. The goal of this document is to help you more quickly identify the elements in FOSS that tightly align to the scale. You have the power and responsibility to add and subtract to best meet the needs of your students.

We have also included links to Heartland AEA resources (all are free) that align with the scale being taught.

First is a link to “[Mystery Science](https://mysteryscience.com/start?code=3728dj2s&allow_skip=true)” this is a fairly comprehensive program built to support the new standards and can provide a number of ways and ideas to help engage your students in the scale. [To login you will need to set up an account with your DMPS email and select your building.](https://mysteryscience.com/start?code=3728dj2s&allow_skip=true)

Next listed is a link to “[Pebble Go](https://www.pebblego.com/)”. This is a resource to help support access for those that are early or struggling readers. Finally for grades 3-5 is [Discovery Education](http://www.discoveryeducation.com/) a bank of resources around the scale content materials. To access these or any other AEA resources you will need to use your DMPS login (username 1737----- and password haea11), if you do not know your building username we can help you.

The final link is to the list of [Heartland online resources](http://www.heartlandaea.org/library-and-digital-resources/online-resources/k-5th-grade/) in general that you may find helpful (True Flix, Book Flix, netTrekker, etc.)

2nd Grade Science

|  |  |
| --- | --- |
| Changes in Earth’s Surface  SEP-Constructing Explanations DCI- Earths Place in Universe, Earth Systems CCC- Stability and Change | |
| 4 | The student demonstrates in-depth inferences and applications that go beyond the goal. |
| 3  Learning Goal | Students will:   1. Use information from several sources to provide evidence that Earth events can occur quickly or slowly.( [2 ESS1-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/2-ESS1-1%20Evidence%20Statements%20June%202015%20asterisks.pdf)) 2. Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.\* ([2 ESS2-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/2-ESS2-1%20Evidence%20Statements%20June%202015%20asterisks.pdf)) |
| 2 | Students will:   1. 1. Describe that some Earth events can occur quickly (landslide) and others slowly (weathering of rocks) over time.   2. Make observations (first hand or through media) as evidence of Earth events happening quickly and over time.  3. Use multiple sources to gather information.   1. 1. Identify problems created by wind or water in the context of changing land shapes.   2. Describe a solution to slow or prevent a wind/water land changing problem.  3. List proposed solutions to a wind/water problem.  Potential Vocabulary:  Stability, Change, Pattern, Model, Erosion, Weathering, Landforms |
| 1 | Student’s performance reflects insufficient progress towards foundational skills and knowledge. |

|  |  |
| --- | --- |
| **Changes in Earth’s Surface** | |
| **“Big Idea”**  **The big idea to be gained here is that earth processes can occur quickly or slowly depending on the event and that sometimes these changes can be slowed or prevented to help humans. So an effort to slow or prevent the factors that change the shape of land will be explored and tried in order to engineer the “best” solution.** | |
| FOSS  Pebbles, Sand, and Silt | Additional Resources |
| Investigation 1 ESS 1-1 Parts 1 and 2 Teacher Guide pg 83  Investigation 2 ETS Part 1 Teacher Guide pg 133  Investigation 4 ESS 2-1 Part 4 Teacher Guide pg 231 | [Mystery Science- Work of Water Mystery’s 1-4](https://mysteryscience.com/water/earth-s-surface-processes)  [Pebble Go- Earth Science](https://www.pebblego.com/modules/2/categories/2993)  [Heartland AEA](http://www.heartlandaea.org/library-and-digital-resources/online-resources/k-5th-grade/) |

|  |  |
| --- | --- |
| Land and Water  SEP-Developing and using Models, Obtaining Information DCI- Earth Systems CCC- Patterns | |
| 4 | The student demonstrates in-depth inferences and applications that go beyond the goal. |
| 3  Learning Goal | Students will:   1. Develop a model to represent the shapes and kinds of land and bodies of water in an area.([2 ESS2-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/2-ESS2-2%20Evidence%20Statements%20June%202015%20asterisks.pdf)) 2. Obtain information to identify where water is found on Earth and that it can be solid or liquid. ([2 ESS2-3](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/2-ESS2-3%20Evidence%20Statements%20June%202015%20asterisks.pdf)) |
| 2 | Students will:   1. 1. Identify the relevant parts of a model that represent land and/or bodies of water.   2. Use a model to describe the relationships between land and water.  3. Describe how shapes can represent land and bodies of water in a model (or map).   1. 1. Use media sources to find information about water: sources, forms, and patterns across the planet.   2. Identify a quality source of information for Science information.  Potential vocabulary: Stability, Change, Erosion, Event, Pattern |
| 1 | Student’s performance reflects insufficient progress towards foundational skills and knowledge. |

|  |  |
| --- | --- |
| **Land and Water** | |
| **“Big Idea”**  **Here students will express their thinking and understanding of land shapes through modeling. The should also develop the idea or concept that water over the earth can be found in both liquid and solid states.** | |
| FOSS  Pebbles, Sand, and Silt | Additional Resources |
| Investigation 2 ESS 2-2 Part 4 Teacher Guide pg 155  Investigation 4 ESS 2-3 Part 3 and 4 Teacher Guide pg 249 | [Pebble Go- Earth Science](https://www.pebblego.com/modules/2/categories/2993)  [Heartland AEA](http://www.heartlandaea.org/library-and-digital-resources/online-resources/k-5th-grade/) |

|  |  |
| --- | --- |
| Properties of Materials  SEP- Plan and Carryout Investigations, Analyze data, Constructing Explanations DCI- Properties of Matter CCC- Patterns, Cause and Effect Energy and Matter | |
| 4 | The student demonstrates in-depth inferences and applications that go beyond the goal. |
| 3  Learning Goal | Students will:   1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties. ([2-PS1-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/2-PS1-1%20Evidence%20Statements%20June%202015%20asterisks.pdf)) 2. Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.\* ([2-PS1-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/2-PS1-2%20Evidence%20Statements%20June%202015%20asterisks.pdf), [K-2-ETS1-3](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/K-2-ETS1-3%20Evidence%20Statements%20June%202015%20asterisks.pdf)) 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-PS1-3](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/2-PS1-3%20Evidence%20Statements%20June%202015%20asterisks.pdf)) |
| 2 | Students will:   1. 1. Describe the properties (shape, color, texture, hardness, flexibility, solid, or liquid) of different materials.   2. Use patterns of material properties to group/sort the materials.  3. Collect, record, and organize data from matter properties investigation.   1. 1. Given a display of information (pictures, charts, graphs), students can organize material by properties.   2. Identify and describe relationships between properties of materials and some potential uses  3. Organize data to group what materials might be best used for.   1. 1. Describe that an object made of small pieces can rearranged to be made into a new object.   2. List properties of original object and object after parts reassembled.  Potential Vocabulary:  Solid, Liquid, Matter, Property, Pattern, Classify, Sort |
| 1 | Student’s learning reflects insufficient progress towards foundational skills and knowledge. |

|  |  |
| --- | --- |
| **Properties of Materials** | |
| **“Big Idea”**  **There are several ideas in this scale. The main one being to use observation to group or classify materials based on their properties. Then use this information as data to determine which materials might best be suited to accomplish a certain task.**  **On top of this is to help the learner recognize and construct the explanation that objects are made of smaller objects and depending on how those smaller objects are arranged can create new and different materials.** | |
| FOSS  Solids and Liquids | Additional Resources |
| PS 1-1 addressed in all 4 Investigations and parts  PS 1-2 Investigation 3 part 1 Investigation 4 Part 1  PS 1-3 Investigation 1 Part 4  Select the parts that best fit your students need and time frame  Investigation 1 Teacher Guide pg 81-Solids  Investigation 2 Teacher Guide pg 145- Liquids  Investigation 3 Teacher Guide pg 189- Bits and Pieces  Investigation 4 Teacher Guide pg 236 | [Mystery Science- Materials Magic- Mystery’s 1-4](https://mysteryscience.com/materials/properties-phases-of-matter)  [Pebble Go- Physical Science -Matter](https://www.pebblego.com/modules/2/categories/2988)-What is Matter  [Heartland AEA](http://www.heartlandaea.org/library-and-digital-resources/online-resources/k-5th-grade/) |

|  |  |
| --- | --- |
| Heating and Cooling  SEP- Engaging in Argument from Evidence, Analyze Data DCI- Properties of Matter CCC- Cause and Effect | |
| 4 | The student demonstrates in-depth inferences and applications that go beyond the goal. |
| 3  Learning Goal | Students will:   1. Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot. ([2 PS 1-4](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/2-PS1-4%20Evidence%20Statements%20June%202015%20asterisks.pdf)) |
| 2 | Students will:   1. 1. Make a claim about the result of heating and cooling on matter.   2. Observe material before heating, after heating, and when heating or cooling is reversed.  3. Describe the ability to reverse the effect of heating or cooling of material.  4. Describe the impact of heating/cooling on material properties.  Potential vocabulary: Investigation, Cause, Effect, Pattern, Evidence, Classify, Reversed, Separate, Solid, Liquid, |
| 1 | Student’s learning reflects insufficient progress towards foundational skills and knowledge. |

|  |  |
| --- | --- |
| **Heating and Cooling** | |
| **“Big Idea”**  **Through observation and data collection be able to use evidence to argue that some changes that happen when an object is heated can be reversed (ice - water) and some cannot (an egg).** | |
| FOSS  Solids and Liquids | Additional Resources |
| Investigation 3 Teacher Guide pg 189- Bits and Pieces  Investigation 4 Teacher Guide pg 236- Solids Liquids and Water | [Mystery Science- Material Magic Mystery 2](https://mysteryscience.com/materials/properties-phases-of-matter)  [Pebble Go- Physical Science -Matter](https://www.pebblego.com/modules/2/categories/2988)-What is Matter  [Heartland AEA](http://www.heartlandaea.org/library-and-digital-resources/online-resources/k-5th-grade/) |

|  |  |
| --- | --- |
| Interactions of Plants and Animals  SEP- Plan and Conduct investigations, Develop and Use Models DCI- Ecosystems CCC- Structure and Function, Cause and Effect | |
| 4 | The student demonstrates in-depth inferences and applications that go beyond the goal. |
| 3  Learning Goal | Students will:   1. Plan and conduct an investigation to determine if plants need sunlight and water to grow. ([2 LS 2-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/2-LS2-1%20Evidence%20Statements%20June%202015%20asterisks.pdf)) 2. Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.\* ([2 LS2-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/2-LS2-2%20Evidence%20Statements%20June%202015%20asterisks.pdf)) |
| 2 | Students will:   1. 1. Collaboratively plan an investigation on plant/animal needs.   2. Identify a variable to be controlled and measured (light, water, etc.) in an investigation around plant needs.  3. Identify evidence that can be used to support or refute a claim.  4. Collect and organize data from investigation.   1. 1. Describe how an animal helps in seed dispersal or pollination of a plant.   2. Identify components of dispersal model.  3. Describe how the structure supports the function in the model.  Potential vocabulary: Ecosystem, Cause, Effect, Life Cycle, Structure, Insect |
| 1 | Student’s performance reflects insufficient progress towards foundational skills and knowledge. |

|  |  |
| --- | --- |
| **Interactions of Plants and Animals** | |
| **“Big Idea”**  **Here the learner will conduct investigations to gather evidence and determine that plants need sunlight and water to grow. They will then model how animals contribute to the dispersal of seeds.** | |
| FOSS  Insects and Plants | Additional Resources |
| Investigation 2 LS 2-1 Part 2 Teacher Guide pg 149  Investigation 5 LS 2-2 Part 4 Teacher Guide pg 311 | [Mystery Science- Plant Adventures](https://mysteryscience.com/plants/structure-function-adaptations)  [Pebble Go- Life Science](https://www.pebblego.com/modules/2/categories/2997)  [Heartland AEA](http://www.heartlandaea.org/library-and-digital-resources/online-resources/k-5th-grade/) |

|  |  |
| --- | --- |
| Diversity of Life  SEP- Plan and Conduct Investigations DCI- Ecosystems, Evolution CCC- | |
| 4 | The student demonstrates in-depth inferences and applications that go beyond the goal. |
| 3  Learning Goal | Students will:   1. Make observations of plants and animals to compare the diversity of life in different habitats. ([2 LS 4-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/2-LS4-1%20Evidence%20Statements%20June%202015%20asterisks.pdf) |
| 2 | Students will:   1. 1. Describe plant and animal diversity in a habitat. 2. List living and non-living elements of a given habitat. 3. Collect, record, and organize data during a habitat observation.   Potential vocabulary: Biodiversity, Human Impact, Ecosystem |
| 1 | Student’s performance reflects insufficient progress towards foundational skills and knowledge. |

|  |  |
| --- | --- |
| **Diversity of Life** | |
| **“Big Idea”**  **Through the planning and conducting of investigation students make multiple observations to compare the diversity of life in various habitats.** | |
| FOSS  Insects and Plants | Additional Resources |
| Multiple investigations address this scale. Use the one or ones that are the best fits for your students and the time available.  Investigation 1 Parts 1 and 2 Teacher Guide pg 87  Investigation 2 Parts 1 and 2 Teacher Guide pg 139  Investigation 3 All parts Teacher Guide pg 193  Investigation 4 All Parts Teacher Guide pg 241  Investigation 5 All Parts Teacher Guide pg 291 | [Mystery Science- Animal Adventures](https://mysteryscience.com/biodiversity/biodiversity)  [Pebble Go- Life Science](https://www.pebblego.com/modules/2/categories/2997)  [Heartland AEA](http://www.heartlandaea.org/library-and-digital-resources/online-resources/k-5th-grade/) |