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|  | 2021-2022  Elementary Science  Quick Guide  Grade 1 |

<http://elementary.dmschools.org>

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Grade 1: Year at a Glance

1st

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| **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** | **SS** | **Science** | **Science** | **SS** |
| **EL Module 1: Tools and Work** | | **EL Module 2: The Sun, Moon, and Stars** | | **EL Module 3: Birds’ Amazing Bodies** | | **EL Module 4: Caring for Birds** | |
| My Family and Neighborhood  **** | Roles and Rights  **** | Patterns in the Sky (Air and Weather FOSS kit)  **** | Light Waves  Sound Waves (Sound and Light FOSS kit) | My World Then and Now | Heredity (Plants and Animals FOSS Kit  **** | How Things Survive (Plants and Animals FOSS kit)  **** | Goods and Services |

** = STRONG alignment to EL materials**

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| FOSS Kits  Topic Scales | **Plants and Animals Foss Kit** | **Air and Weather Foss kit** | **Light and Sound Foss Kit** |
| **Heredity** | Investigations 1, 2, 3, and 4 |  |  |
| **How Things Survive** | Investigations 3, and 4 |  |  |
| **Patterns in the Sky** |  | Investigations 2 and 4 |  |
| **Light Waves** |  |  | Investigations 1 and 2 |
| **Sound Waves** |  |  | Investigations 3 and 4 |

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.)

1st Grade Science

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| Patterns in the Sky  SEP- Plan and Carry out Investigations, Analyze Data DCI- Earth’s Place in the universe CCC- Patterns | |
| 4 | The student demonstrates in-depth inferences and applications that go beyond the goal. |
| 3  Learning Goal | Students will:   1. Use observations of the sun, moon, and stars to describe patterns that can be predicted. ([1 ESS1-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/1-ESS1-1%20Evidence%20Statements%20June%202015%20asterisks.pdf)) 2. Make observations at different times of year to relate amount of daylight to time of year. ([1 ESS 1-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/1-ESS1-2%20Evidence%20Statements%20June%202015%20asterisks.pdf))  |  | | --- | |  | |
| 2 | Students will:   1. 1. With guidance organize data into charts and/or pictures (what is visible in day, night, sun and moon position at different times of the day and night, weather calendar)   2. Identify and describe patterns from observations.  3. Use sky patterns to make predictions for future days and times.  B. 1. Identify relationships between the amount of daylight and time of year  2. Use observations over time to state daylight patterns  3. Make and record observations over an extended period of time.  Students will recognize or recall specific vocabulary, such as:  Pattern, Star, Sun, Moon, Earth, Daylight, Predict, Sunrise, Sunset, Cloud |
| 1 | Student's performance reflects beginning-to-learn foundational skills and knowledge. |

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| **Patterns in the Sky** | |
| **“Big Idea”**  **Students collect data through observations and then determine what parts of the data can be used to make predicable patterns regarding sun, moon, stars, or daylight.** | |
| FOSS  Air and Weather | Other Resources |
| Investigation 2 Parts 1-4 Teacher Guide pg 147  Investigation 4 Parts 1-3 Teacher Guide pg 247 | [Mystery Science- Spinning Sky Mystery’s 1-6](https://mysteryscience.com/sky/sun-moon-stars)  [Pebble Go- Seasons and Space Science](https://www.pebblego.com/modules/2/categories/2999)  [Heartland AEA](http://www.heartlandaea.org/library-and-digital-resources/online-resources/k-5th-grade/) |

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| Sound Waves  SEP- Plan and Carry out Investigations, Constructing Explanations DCI- Wave Application CCC- 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 investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. ([1-PS4-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/1-PS4-1%20Evidence%20Statements%20June%202015%20asterisks.pdf)) 2. Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.\* ([1-PS4-4](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/1-PS4-4%20Evidence%20Statements%20June%202015%20asterisks.pdf), [K-2-ETS1-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/K-2-ETS1-2%20Evidence%20Statements%20June%202015%20asterisks.pdf)) |
| 2 | Students will:   1. 1. Identify relationships between vibration and sound.   2. Observe that sound can make things vibrate and that vibration can make sound.  3. Collect data to support the sound/vibration relationship.  4. Collaboratively develop an investigation around vibration/sound(materials used,  data collected, method for recording data, what will be recorded, how it will be  shared)   1. 1. Describe a problem involving people communicating over long distance.   2. Describe a way to solve a communication problem with sound.  3. Describe effectiveness of communication solutions.  Students will recognize or recall specific vocabulary, such as:  Vibrate, Sound, Cause, Effect, Application, Wave, Volume, Pitch |
| 1 | Student's performance reflects beginning-to-learn foundational skills and knowledge. |

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| **Sound Waves** | |
| **“Big Idea”**  **Investigate to determine a cause and effect relationship between sound and the vibration of a material. Use engineering principles to build refine and improve a device that can use sound to communicate over a distance.** | |
| FOSS  Sound and Light | Other Resources |
| Investigation 1 Teacher Guide pg 85  Parts 1 and 2 have highest alignment  Investigation 2 Teacher Guide pg 133  Parts 1-4 | [Mystery Science Lights and Sound Mystery’s 1, 2 and 5.6](https://mysteryscience.com/light/properties-of-light-sound)  [Pebble Go- Physical Science- Sound](https://www.pebblego.com/modules/2/categories/2998)  [Heartland AEA](http://www.heartlandaea.org/library-and-digital-resources/online-resources/k-5th-grade/) |

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| Light Waves  SEP- Plan and Carry out Investigations, Constructing Explanations DCI- Wave Application CCC- Cause and Effect | |
| 4 | The student demonstrates in-depth inferences and applications that go beyond the goal. |
| 3  Learning Goal | Students will:   1. Make observations to construct an evidence-based account that objects in darkness can be seen only when illuminated. ([1-PS4-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/1-PS4-2%20Evidence%20Statements%20June%202015%20asterisks.pdf)) 2. Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light. ([1 PS4-3](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/1-PS4-3%20Evidence%20Statements%20June%202015%20asterisks.pdf)) |
| 2 | Students will:   1. 1. Express the need for light to see objects.   2. Make observations of an object’s appearance in the light, dark, and in the dark when an object produces a light.  3. Use observations as evidence to support an explanation of how we see.   1. 1. Collaboratively design an investigation around light (how light passes through (or not) different materials).   2. Conduct an investigation around light.  3. Collect and record observations from investigation.  4. Use information from investigation as evidence to answer questions.  Students will recognize or recall specific vocabulary, such as:  Wave, Light, Illuminate, Evidence Cause, Effect, Transparent, Translucent, Opaque, Reflective. |
| 1 | Student's performance reflects beginning-to-learn foundational skills and knowledge. |

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| **Light Waves** | |
| **“Big Idea”**  **Plan and conduct investigations around light and how it passes through different objects. Also reinforce the idea that objects can only be seen when light is present.** | |
| FOSS  Light and Sound | Other Resources |
| Investigation 3 Part 1-3 Teacher Guide 179  Investigation 4 Part 1-4 Teacher Guide 217 | [Mystery Science Lights and Sound Mystery’s 3.4 and 5,6](https://mysteryscience.com/light/properties-of-light-sound)  [Pebble Go- Physical Science- Light](https://www.pebblego.com/modules/2/categories/2998)  [Heartland AEA](http://www.heartlandaea.org/library-and-digital-resources/online-resources/k-5th-grade/) |

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| Heredity  SEP- Constructing an Explanation DCI- Heredity CCC- Patterns | |
| 4 | The student demonstrates in-depth inferences and applications that go beyond the goal. |
| 3  Learning Goal | Students will:   1. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents. ([1-LS 3-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/1-LS3-1%20Evidence%20Statements%20June%202015%20asterisks.pdf)) |
| 2 | Students will:   1. 1. Describe observations from a plant investigation.   2. Recognize plant and animal offspring are like (but not exactly like) parents.  3. Describe characteristics that distinguish different plants and/or animals from each other.  4. List plant and /or animal differences/similarities.  Students will recognize or recall specific vocabulary, such as:  Offspring, inherit, Trait, Pattern, Stem, Seed, |
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| **Heredity** | |
| **“Big Idea”**  **Through observations used as evidence students can develop an explanation that the offspring of a living thing (plant or animal) is like but not exactly like the parent.** | |
| FOSS  Plants and Animals | Other Resources |
| Investigation 1- Can be referred throughout Investigation but is explicit in Part 4 Teacher Guide pg 121 discussing how living things are similar and have variation.  Investigation 2- Can be referred to throughout. Especially when discussing the “cuttings” in part 3 and similarities to starting plant  Investigation 3- Can be referred to throughout.  Investigation 4- Can be referred to throughout. Especially in part 3 teacher guide pg 250 in reading “Animals and their Young”. | [Mystery Science- Plant and Animal Superpowers Mystery 4 Why do family member look similar](https://mysteryscience.com/powers/parts-survival-growth)  [Pebble Go- Life Science- Heredity](https://www.pebblego.com/modules/2/categories/2997/articles/2183)  [Heartland AEA](http://www.heartlandaea.org/library-and-digital-resources/online-resources/k-5th-grade/) |

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| How Things Survive  SEP- Constructing an Explanation, Obtaining, Evaluating and Communicating Information DCI- Molecules to Organisms CCC- Patterns, Structure and Function | |
| 4 | The student demonstrates in-depth inferences and applications that go beyond the goal. |
| 3  Learning Goal | Students will:   1. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.\* ([1-LS1-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/1-LS1-1%20Evidence%20Statements%20June%202015%20asterisks.pdf), [K-2-ETS1-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/K-2-ETS1-2%20Evidence%20Statements%20June%202015%20asterisks.pdf)) 2. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive. ([1 LS1-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/1-LS1-2%20Evidence%20Statements%20June%202015%20asterisks.pdf) ) |
| 2 | Students will:   1. 1. With guidance, describe a solution to a living system (terrarium) problem.   2. Describe a device to solve a human problem (examples: mimicking-external structures, sensing and convey information, responding to the environment).  3. List features of a device to solve a human problem.  4. Describe how the solution does or does not meet the solution criteria.   1. 1. Use books to find information on the survival of living things and their offspring.   2. Identify patterns in what parent and offspring do to survive.  3. Describe how parents help offspring survive.  Students will recognize or recall specific vocabulary, such as:  Structure, Function, Pattern, Survive, Grow, Mimic, Respond, Environment, Offspring |
| 1 | Student's performance reflects beginning-to-learn foundational skills and knowledge. |

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| **How Things Survive** | |
| **“Big Idea”**  **Student use a variety of methods to see and determine patterns in behavior that support survival. Particularly the parent offspring relationship. In the engineering aspect they will use materials to solve a human problem by utilizing something they have learned from a feature a plant or animal uses to help them survive.** | |
| FOSS  Plants and Animals | Other Resources |
| Investigation 3 Part 4 (LS 1-1) teacher guide pg 207  Investigation 4 Part 3 (LS 1-2) teacher guide pg 249 | [Mystery Science- Plant and Animal Superpowers Mystery 1 and 2](https://mysteryscience.com/powers/parts-survival-growth)  [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/) |