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|  | 2018-2019  Elementary Science  Quick Guide  Grade Kindergarten |

<http://elementary.dmschools.org>

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Grade K: Year at a Glance

Kindergarten

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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** |  |  |  |  |
| Myself and Getting Along (Behavioral Science and Civics) | People Around Me (History) | Weather  +  Sun’s Energy  (Trees and Weather FOSS Kit) | Forces and Motion  + Earth and Humans  (Materials and Motions) | My World (Geography) | Choices  (Economics) | Needs of Living Things  (Animals Two by Two) | Needs of Living Things  (Animals Two by Two) |

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| Topic Scales | **Trees and Weather Foss kit**  **Q2** | **Materials and Motion Foss Kit**  **Q2** | **Animals Two by Two Foss Kit**  **Q4** |
| *Suggested Pacing* | *Oct-Nov* | *Nov-Jan* | *Apr-May* |
| **Forces and Motion** |  | Investigation 4 |  |
| **Earth and Humans** |  | Investigations 1 and 2 |  |
| **The Sun’s Energy** | Investigation 3 | Investigation 3 |  |
| **Weather** | Investigations 3 and 4 |  |  |
| **The Needs of Living Things** | Investigation 4 |  | Investigations 1, 2, 3, 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.)

# KINDERGARTEN Science

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| The Sun’s Energy  SEP-Plan and Carry Out Investigations, Construct Explanations DCI- Energy 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 determine the effect of sunlight on Earth’s surface. ([K-PS3-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/K-PS3-1%20Evidence%20Statements%20June%202015%20asterisks.pdf)) 2. Use tools and materials provided to design and build a structure that will reduce the warming effect of sunlight on Earth’s surface.\* ([K-PS3-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/K-PS3-2%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. Describe the effect of Sunlight on Earth’s surface (e.g., dirt, sand, rock, water, grass)   2. Collect and record data to compare the warmth of Earth materials placed in the sunlight and the same materials placed in the shade.  3. Describe (with guidance) purpose or parts of an investigation.  4. Identify patterns of relative warmth of materials in sunlight and in shade.   1. 1. Use tools and materials to solve a specific (Sun/energy) problem.   2. Describe how a device can reduce a warming effect.  3. Describe if a design met expectations in “cause (block sunlight) effect (less warmth)” terms.  *Students will recognize or recall specific vocabulary, such as:*  Energy, Sunlight, Effect, Design, Temperature |
| 1 | Student's performance reflects beginning-to-learn foundational skills and knowledge. |

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| **The Sun’s Energy** | |
| **“Big Idea”**  **Use observation skills to determine cause and effect patterns from Sun’s energy. Then use tools and materials that can reduce or alter that effect.** | |
| FOSS  Materials and Motion Investigation 3 part 6  Trees and Weather | Additional Resources |
| Materials and Motion  Investigation 3 Part 6 Building Structure  Teacher Guide pg 251 (PS3-2 ETS 1-2)  Trees and Weather  Investigation 3 Parts 1- Weather Calendar and Part 2 Recording Temperature begins in Teacher Guide pg 177 (PS3-1) | [Mystery Science Weather Watching Mystery 5 and 6](https://mysteryscience.com/watching/weather-conditions-instruments-seasons)  [Pebble Go- Earth Science- Weather](https://www.pebblego.com/modules/2/categories/2995)  [Heartland AEA](http://www.heartlandaea.org/library-and-digital-resources/online-resources/k-5th-grade/) |

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| Weather  SEP-Analyze Data, Ask Questions, DCI- Earth Systems, Earth and Human Activity CCC- Patterns, Cause and Effect | |
| 4 | The student demonstrates in-depth inferences and applications that go beyond the goal. | |
| 3  Learning Goal | Students will:   1. Use and share observations of local weather conditions to describe patterns over time. ([K-ESS2-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/K-ESS2-1%20Evidence%20Statements%20June%202015%20asterisks.pdf)). 2. Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.\*([K-ESS3-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/K-ESS3-2%20Evidence%20Statements%20June%202015%20asterisks.pdf), [K-2-ETS1-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/K-2-ETS1-1%20Evidence%20Statements%20June%202015%20asterisks.pdf)) | |
| 2 | Students will:   1. 1. Make observations of weather (the number of sunny, cloudy, rainy, windy, cool, or warm days)(relative temperature at various times of the day).   2. Determine patterns in kinds of weather and relative temperature from day to day and month to month.  3. Use a thermometer to measure air temperature.  4. Use a tool (windsock)to show wind pattern relationships.   1. 1. Ask weather related questions based on observations.   2. Use patterns to state likelihood of severe weather in an area.  3. Knows appropriate response for area weather hazards based on forecast or adult directions.  4. Collect weather information from questions.  Students will recognize or recall specific vocabulary, such as:  Air, Blowing, Cloud, Cold, Cool, Direction, Freezing, Hot, Model, Monitor, Overcast, Partly Cloudy, Pattern, Raining, Severe, Snowy, Sunny, Temperature, Thermometer, Warm, Weather, Wind | |
| 1 | Student's performance reflects beginning-to-learn foundational skills and knowledge. | |

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| **Weather** | |
| **“Big Idea”**  **Students use observations to recognize patterns. Students then use that knowledge of patterns in the weather to ask question that address needed information that can then be used to make predictions and wise choices relating to weather (how to dress, severe weather, predicting future weather, etc).**  **\*\*\*This standard might best be addressed over an entire year of observing and recording weather and not in an isolated unit\*\*\*\*** | |
| FOSS  Trees and Weather | Additional Resources |
| Investigation 3  Parts 1-3 Teacher Guide pg 177  Investigation 4  Parts 1-9 Observing Trees over the season Teacher Guide pg 217 | [Mystery Science Weather Watching Mystery 5 and 6](https://mysteryscience.com/watching/weather-conditions-instruments-seasons)  [Pebble Go- Earth Science- Weather](https://www.pebblego.com/modules/2/categories/2995)  [Heartland AEA](http://www.heartlandaea.org/library-and-digital-resources/online-resources/k-5th-grade/) |

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| Forces and Motion  SEP- Plan and Conduct/Analyze Data DCI- Motion and Stability 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 an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.([K PS2-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/K-PS2-1%20Evidence%20Statements%20June%202015%20asterisks.pdf))   2. Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.\* ([K PS2-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/K-PS2-2%20Evidence%20Statements%20June%202015%20asterisks.pdf), [K-S-ETS1-3](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/K-2-ETS1-3%20Evidence%20Statements%20June%202015%20asterisks.pdf)) |
| 2 | Students will:   1. 1. Describe how pushes and pulls can cause things to move.   2. With guidance identify the purpose and key elements of an investigation on the effects of pushes and pulls.  3. Identify the effect caused by the strength of different pushes and pulls.   1. 1. Describe the goal of a design solution that involves a push or a pull.   2. Describe the relative speed and direction of an object before and after a force is applied.  3. Determine whether the push or pull from the design solution causes the intended change in speed or direction of motion of the object.  *Students will recognize or recall specific vocabulary, such as:*  Cause, Collide, Direction, Distance, Effect, Fast, Gentle, Gravity, Motion, Move, Pull, Push, Roll, Ramp, Slope, Slowly, Speed, Strength, Stop |
| 1 | Student's performance reflects beginning-to-learn foundational skills and knowledge. |

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| **Forces and Motion** | |
| **“Big Idea”**  **The hope with this scale is that students begin to see how to collect and analyze data (through observation or things that can be counted) and how it can then be used to help us understand a “cause and effect” relationship. In this case specifically the physical world of pushes and pulls. At this level the planning and conducting of investigations should be with guidance and collaborative. Analysis should lead to being able to see if the intended solution worked based on data (cause and effect).** | |
| FOSS  Motions and Materials Kit | Additional Resources |
| Investigation 4- Getting Things to Move  Part 1- Pushes and Pulls Teacher Guide pg 275 (PS2-1)  Part 2- Colliding Objects- pg 283 (PS2-1 and PS2-2)  Part 3- Rolling Outdoors pg 293 (PS2-1 and PS2-2)  Part 4- Balloon Rockets pg 301 (PS2-2 and ETS 1-3) | [Mystery Science- Force Olympics](https://mysteryscience.com/pushes/forces-machines-engineering)  [Pebble Go-Physical Science- Forces and Motion](https://www.pebblego.com/modules/2/categories/2991)  [Heartland AEA](http://www.heartlandaea.org/library-and-digital-resources/online-resources/k-5th-grade/) |

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| Earth and Humans  SEP-Obtaining Evaluating and Communicating Information DCI- Earth and Human Activity CCC- Cause and Effect | |
| 4 | The student demonstrates in-depth inferences and applications that go beyond the goal. |
| 3  Learning Goal | Students will:   1. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.\* ([K-ESS3-3](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/K-ESS3-3%20Evidence%20Statements%20June%202015%20asterisks.pdf), [K-2-ETS1-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/K-2-ETS1-1%20Evidence%20Statements%20June%202015%20asterisks.pdf)) |
| 2 | Students will:   1. 1. Describe how people affect the land, water, air, and/or other living things in positive and negatives ways.   2. Describe a solution that reduces the negative effects of humans on the local environment  3. Communicate information about solutions with others in oral and/or written form (includes using models and or drawings).  *Students will recognize or recall specific vocabulary, such as:*  Reduce, Impact, Land, Recycle, Environment, Conserve, Reuse |
| 1 | Student's performance reflects beginning-to-learn foundational skills and knowledge. |

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| **Earth and Humans** | |
| **“Big Idea”**  **Communicate (oral or written) human solutions to reduce local environmental impact. Written forms could include drawings or models of science ideas and being able to identify causes through observable patterns.** | |
| FOSS  Motion and Materials Kit | Additional Resources |
| Investigation 1  Parts 1-7 Explores how we use the Resource “Wood” and its impact. Teacher Guide pg 73  Investigation 2  Parts1-5 Explore paper and ways to recycle or re-use. Teacher Guide pg 153  May not need to do all the parts. Use your judgement as to which ones your students would need and benefit from. | [Mystery Science- Plant and Animal Needs Mystery 6](https://mysteryscience.com/secrets/plant-animal-needs)  [Pebble Go- Earth Science- Natural Resources- Humans and Earth](https://www.pebblego.com/modules/2/categories/2949)  [Heartland AEA](http://www.heartlandaea.org/library-and-digital-resources/online-resources/k-5th-grade/) |

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| The Needs of Living Things  SEP-Analyze Data, Use Models, Engage in Argument from Evidence DCI- Molecules to Organisms, Earth and Human Activity CCC- Patterns, System Models, | |
| 4 | The student demonstrates in-depth inferences and applications that go beyond the goal. |
| 3  Learning Goal | Students will:   1. Use observations to describe patterns of what plants and animals (including humans) need to survive. ([K-LS1-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/K-LS1-1%20Evidence%20Statements%20June%202015%20asterisks.pdf)) 2. Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live ([K-ESS 3-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/K-ESS3-1%20Evidence%20Statements%20June%202015%20asterisks.pdf)). 3. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs. ([K-ESS2-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/K-ESS2-2%20Evidence%20Statements%20June%202015%20asterisks.pdf)) |
| 2 | Students will:   1. 1. Use observations to recognize and identify patterns   2. Describe what plants need to grow.  3. Describe what animals need to live and grow.   1. 1. Describe the relationship between specific plants and animals and where they live.   2. Identify components relevant to the model (plants and animals, places where things live, things needed by living things).  3. Describe how plants, animals, and natural resources are a part of a system that allows living things to meet their needs.   1. 1. Make a claim supported by evidence for how plants and animals can change their environment.   2. Describe examples that do or do not support claim.  3. Make a claim in context of how the action supports plant and animal needs.  Students will recognize or recall specific vocabulary, such as:  Patterns, Plants, Animals, Living Things, Survive, Claim, Evidence, Season, Spring, System, Winter |
| 1 | Student's performance reflects beginning-to-learn foundational skills and knowledge. |

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| **The Needs of Living Things** | |
| **“Big Idea”**  **Use observations to recognize patterns in living as opposed to non-living things. What is needed for survival? How can we model or represent our thinking about the connections between plants, animals, and the places they live? Can we use observations and evidence to construct an argument how plants or animals change environments to meet the needs.** | |
| FOSS  Animals Two by Two | Additional Resources |
| Investigation 1 Part 1-5 Caring for Goldfish Teacher Guide pg 79  LS 1-1, ESS2-2, ESS 3-1  Investigation 2 Parts 1-3 Snail Teacher Guide pg 131  LS 1-1, ESS2-2, ESS 3-1  Investigation 3 Parts 1-3 Worms Teacher Guide pg 169  LS 1-1, ESS2-2, ESS 3-1  Investigation 4 Parts 1-4 Isopods Teacher Guide pg 203  LS 1-1, ESS2-2, ESS 3-1   * NOTE: All 4 investigations address the scale so you can decide which investigation or investigations are the best fit for your time and your students. | [Mystery Science -Plant and Animal Secrets](https://mysteryscience.com/secrets/plant-animal-needs)  [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/) |