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|  |  2019-2020 Elementary Science  Quick Guide Grade 3 |

<http://elementary.dmschools.org>

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Grade 3: Year at a Glance

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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** | **Science** | **Science** | **SS** | **SS** | **SS** | **Science** | **Science** |
| **EL Module 1: Overcoming Learning Challenges Near and Far** | **EL Module 2: Adaptations and the Wide World of Frogs** | **EL Module 3: Exploring a Literary Classic** | **EL Module 4: Water Conservation** |
| Migration in the World**** | Life Cycles | Heredity,Natural Selection,Changes in Environment**** | Migration in The United States | Migration in Iowa | Effects of Migration | Forces in Motion,Application of Forces | Weather and Climate**** |

** = STRONG alignment to EL materials**

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| FOSS Kits Topic Scales | **Structure of Life Foss Kit** | **Motion and Matter Foss kit** | **Weather and Climate Foss Kit** |
| **Life Cycles** | Investigations 1 and 2 |  |  |
| **Heredity** | Investigation 3 |  |  |
| **Natural Selection** | Investigation 3 |  |  |
| **Changes in Environment** | Investigations 3 and 4 |  |  |
| **Forces in Motion** |  | Investigations 1 and 2 |  |
| **Application of Forces** |  | Investigations 1 and 3 |  |
| **Weather and Climate** |  |  | 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.)

3rd Grade Science

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| Life CyclesSEP- Developing and Using Models DCI Growth and Development of Organisms CCC- Patterns |
| 4 | The student demonstrates in-depth inferences and applications that go beyond the goal. |
| 3Learning Goal | Students will:1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. ([3 LS1-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/3-LS1-1%20Evidence%20Statements%20June%202015%20asterisks.pdf))
 |
| 2 | Students will:1. 1. Identify the relevant life cycle elements within the model.

2. Use patterns to determine similarities and differences in organism life cycles.3. Describe the common pattern that all life cycles follow.Potential Vocabulary: birth, death, parent, offspring, pattern, model, organism, life cycle, birth, growth, reproduce |
| 1 | Student’s learning reflects insufficient progress towards foundational skills and knowledge. |

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| **Life Cycles** |
| **“Big Idea”****Through the use of models student can communicate thinking to describe organisms as unique and diverse yet having a common cycle (birth, growth, reproduction, and death).** |
| FOSS Structures of Life | Additional Resources |
| Investigation 1 Teacher guide pg 93Part 1 Seed Search, 2 Sprouting Seed, and 3 Seed SoakInvestigation 2 Teacher Guide pg 155Part 1 Germination and Growth and 2 Life Cycles of Bean | [Mystery Science Power of Flowers](https://mysteryscience.com/flowers/life-cycle-traits-heredity)[Pebble Go](https://www.pebblego.com/modules/2/categories/2997/articles/2180) Living and Non Living[Discovery Education](https://app.discoveryeducation.com/scienceelementary/concept?id=Life&guid=660C5907-DEBF-4637-8C6F-110F19B0017D#INTRO%2C4%2C660C5907-DEBF-4637-8C6F-110F19B0017D%2CA30A22DA-22F6-479C-9C0C-AD709625A629%2Cfalse) Life Cycles[Heartland AEA](http://www.heartlandaea.org/library-and-digital-resources/online-resources/k-5th-grade/) |

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| HereditySEP- Analyze Data, Construct and Explanation, DCI- Heredity CCC- Patterns, Cause and Effect, |
| 4 | The student demonstrates in-depth inferences and applications that go beyond the goal. |
| 3Learning Goal | Students will:1. Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. ([3 LS 3-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/3-LS3-1%20Evidence%20Statements%20June%202015%20asterisks.pdf))
2. Use evidence to support the explanation that traits can be influenced by the environment. ([3 LS 3-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/3-LS3-2%20Evidence%20Statements%20June%202015%20asterisks.pdf))
 |
| 2 | Students will: 1. Identify and describe patterns in data to show similarities and differences in traits in parents, offspring, and siblings

 1. 1. Describe how the environment can influence traits.

2. Describes a “cause and effect” connection for environment and traits.Potential vocabulary: parent, offspring, property, evidence, cause, effect, environment, trait, variation, survive,  |
| 1 | Student’s learning reflects insufficient progress towards foundational skills and knowledge. |

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| **Heredity** |
| **“Big Idea”****Through the analysis of data students will use evidence to support claims about how traits in both plants and animals are passed on to offspring and also use evidence to construct explanations how those traits can be influenced by the environment (develop the ideas of “survival of the fittest” over time).** |
| FOSS Structures of Life | Additional Resources |
| Investigation 3 Teacher Guide pg 239Part 3 Territorial Group Behaviors and 4 Comparing Animals | [Mystery Science Power of Flowers Mystery 3](https://mysteryscience.com/flowers/life-cycle-traits-heredity)[Pebble Go](https://www.pebblego.com/modules/2/categories/2997/articles/2183) Heredity[Discovery Education](https://app.discoveryeducation.com/scienceelementary/concept?id=Life&guid=660C5907-DEBF-4637-8C6F-110F19B0017D#INTRO%2C4%2C660C5907-DEBF-4637-8C6F-110F19B0017D%2C1A12BC43-4AF3-45EB-B9D1-56FBC54D1831%2Cfalse) Inheritance[Heartland AEA](http://www.heartlandaea.org/library-and-digital-resources/online-resources/k-5th-grade/) |

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| **Natural Selection****SEP-** Argue from evidence,Constructing Explanations **DCI-** Ecosystems, Evolution **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 that some animals form groups that help members survive. ([3 LS2-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/3-LS2-1%20Evidence%20Statements%20June%202015%20asterisks.pdf))
2. Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing. ([3 LS 4-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/3-LS4-2%20Evidence%20Statements%20June%202015%20asterisks.pdf))
3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all. ([3 LS 4-3](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/3-LS4-3%20Evidence%20Statements%20June%202015%20asterisks.pdf))
 |
| **2** | Students will:  1. 1. Describe how being a part of a group can aid in survival.

2. Describe how an adult organism aids younger ones. 3. Describe how leaving a group can impact survival for an individual. 1. 1. Describe how a characteristic may give advantages for that organism to survive and reproduce.

2.  Given a characteristic (thorns on a plant or camouflage of an animal) provide evidence of the impact that characteristic has on the organism’s survival. 1. 1. Describe how a particular habitat can aid the survival of an organism.

2.  List the needs of an organism and how the environment supports survival. 3.  Describe how the environment can meet or does not meet the needs of an organism.               Potential vocabulary: evidence, cause, effect, environment, habitat, trait, variation, survive   |
| **1** | Student’s learning reflects insufficient progress towards foundational skills and knowledge.  |

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| **Natural Selection** |
| **“Big Idea”****Construct evidence-based arguments how animal groups, variations, and habitats allow certain organisms to survive and thrive while others do not.** |
| FOSS Structures of Life | Additional Resources |
| Investigation 3 Teacher Guide 205Part 1 Crayfish Structures, 2 Characteristics and Adaptations, 3 Territorial and Group Behavior, and 4 Comparing Animals | [Mystery Science Power of Flowers Mystery 3](https://mysteryscience.com/flowers/life-cycle-traits-heredity)[Pebble Go](https://www.pebblego.com/modules/2/categories/2997/articles/2183) Heredity[Discovery Education](https://app.discoveryeducation.com/scienceelementary/concept?id=Life&guid=660C5907-DEBF-4637-8C6F-110F19B0017D#INTRO%2C4%2C660C5907-DEBF-4637-8C6F-110F19B0017D%2C1A12BC43-4AF3-45EB-B9D1-56FBC54D1831%2Cfalse) Inheritance[Discovery Science](https://app.discoveryeducation.com/scienceelementary/concept?id=Life&guid=87291710-A832-4CAF-8C45-0C062AB1CE98) Habitat[Heartland AEA](http://www.heartlandaea.org/library-and-digital-resources/online-resources/k-5th-grade/) |

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| **Changes in the Environment****SEP-** Argue from evidence,Analyze Data **DCI-** Evolution, **CCC-** Scale, Proportion, and Quantity,Systems |
| **4** | The student demonstrates in-depth inferences and applications that go beyond the goal.  |
| **3****Learning Goal** | Students will: 1. Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago. ([3 LS4-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/3-LS4-1%20Evidence%20Statements%20June%202015%20asterisks.pdf))
2. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.\* ([3 LS 4-4](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/3-LS4-4%20Evidence%20Statements%20June%202015%20asterisks.pdf), [3-5-ETS1-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/3-5-ETS1-2%20Evidence%20Statements%20June%202015%20asterisks-5.pdf))
 |
| **2** |  Students will:  1. 1. Identify and connect data to: fossils, what plants or animals they represent, where they lived, and the animals and plants alive now.

2. Use fossils as evidence to describe organisms and environments from the past. 3. Describe how fossil evidence can inform us about living conditions and environments past and present. 1. 1. Describe how a change in the environment can create problems and impact a system of plants and animals.

2. Discuss the merits of a solution to address the problem caused by an environmental change. 2. Describe effect of solution on plants and animals. 3. Rate the quality and/or the impact of a solution.   Potential vocabulary:  fossil, evidence  |
| **1** | Student’s learning reflects insufficient progress towards foundational skills and knowledge.  |

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| **Changes in the Environment** |
| **“Big Idea”****Examine data from the past to see how organisms and environments have changed then make a supported claim as to the merit of a solution to an environmental problem and its potential impact on the plants and animals.** |
| FOSS Structures of Life | Additional Resources |
| Investigation 3 Teacher Guide 251Part 4 Comparing AnimalsInvestigation 4 Teacher Guide 305Part 2 Owl Pellets | [Mystery Science Animals Through Time](https://mysteryscience.com/animals/habitats-heredity-change-over-time)[Pebble Go](https://www.pebblego.com/modules/2/categories/2997/articles/2182)[Discovery Education](https://app.discoveryeducation.com/scienceelementary/concept?id=Life&guid=87291710-A832-4CAF-8C45-0C062AB1CE98) Habitat[Heartland AEA](http://www.heartlandaea.org/library-and-digital-resources/online-resources/k-5th-grade/) |

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| Forces in MotionSEP- Plan and conduct investigations, DCI- Forces and Motion CCC- Cause and Effect, Patterns |
| 4 | The student demonstrates in-depth inferences and applications that go beyond the goal. |
| 3Learning Goal | Students will:1. Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object. ([3 PS2-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/3-PS2-1%20Evidence%20Statements%20June%202015%20asterisks.pdf))
2. Make observations and/or measurements of an object’s motion to provide evidence that a pattern can be used to predict future motion. ([3 PS2-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/3-PS2-2%20Evidence%20Statements%20June%202015%20asterisks.pdf))
 |
| 2 | Students will:1. 1. Identify key concepts (force and motion) and describe the purpose of an investigation.

2. Describe how different strengths and directions of balanced forces impact motion when applied to an object.3. Describe how different strengths and directions of unbalanced forces impact motion when applied to an object.4. Collaboratively collect and organize data to identify forces acting on objects at rest and in motion.1. 1. Observe the motion of an object and suggest patterns in its movement.

2. Identify and collect data to provide evidence for a suggested movement pattern.3. Use data to make reasonable future predictions about motion. Potential Vocabulary:Forces, Motion, Balanced, Unbalanced, Cause, Effect, Magnet, Friction |
| 1 | Student’s performance reflects insufficient progress towards foundational skills and knowledge. |

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| **Forces in Motion** |
| **“Big Idea”****Plan and conduct investigations involving forces and use the observations from those investigations to predict future motion.** |
| FOSS Motion and Matter | Additional Resources |
| Investigation 1 Teacher Guide 89Part 1 Two Forces, 2 Magnetic Force and 3 More About ForcesInvestigation 2 Teacher Guide pg 133Part 1 Wheel and Axle, 2 Predicting Motion of New Systems, and 3 Twirly Birds | [Mystery Science](https://mysteryscience.com/forces/forces-motion-magnetism) Invisible Forces Mystery 1,2,3[Pebble Go](https://www.pebblego.com/modules/2/categories/2991) Forces and Motion[Discovery Education](https://app.discoveryeducation.com/scienceelementary/concept?id=Physical&guid=EA4D7862-CB55-4DDA-B8B8-7ECB6980A1E4) Forces and Motions[Heartland AEA](http://www.heartlandaea.org/library-and-digital-resources/online-resources/k-5th-grade/) |

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| Application of ForcesSEP- Asking Questions DCI- Forces and Motion CCC- Cause and Effect |
| 4 | The student demonstrates in-depth inferences and applications that go beyond the goal. |
| 3Learning Goal |  Students will:1. Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other. ([3 PS 2-3](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/3-PS2-3%20Evidence%20Statements%20June%202015%20asterisks.pdf))
2. Define a simple design problem that can be solved by applying scientific ideas about magnets.\* ([3 PS2-4](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/3-PS2-4%20Evidence%20Statements%20June%202015%20asterisks.pdf), [3-5-ETS1-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/3-5-ETS1-1%20Evidence%20Statements%20June%202015%20asterisks-4.pdf))
 |
| 2 | Students will:1. 1. After observing 2 objects not in contact (electric or magnetic) can ask appropriate questions (size of force, attraction or repulsion, where the force is coming from, etc.) to learn more about them.

2. Asks questions about forces and motion that can be tested. 1. 1. Describe how a problem can be solved using forces between magnets.

2. Identify constraints such as time, cost, and materials.3. Describe how the size of the force is influenced by the properties of the objects, distance between objects, and orientation of magnets relative to each other. Potential vocabularyMagnet, repel, attract, magnetic force, magnetic field, |
| 1 | Student’s performance reflects insufficient progress towards foundational skills and knowledge. |

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| **Application of Forces** |
| **“Big Idea”****Determine a cause and effect relationship between 2 objects even when they do not physically contact one another (magnets). Use this knowledge to design a solution to a problem involving magnets.** |
| FOSS Motion and Matter | Additional Resources |
| Investigation 1Part 2 Magnetic Force Teacher Guide 103Investigation 3Part 4 Cart Tricks Teacher Guide 207 | [Mystery Science](https://mysteryscience.com/forces/forces-motion-magnetism) Invisible Forces Mystery 4 and 5[Pebble Go](https://www.pebblego.com/modules/2/categories/2991/articles/2098) Magnetism [Discovery Education](https://app.discoveryeducation.com/scienceelementary/concept?id=Physical&guid=85A85662-057C-4131-B421-116327845D0F#INTRO%2C4%2C85A85662-057C-4131-B421-116327845D0F%2C22C4BEA6-4A5C-4050-8E6E-C364A2F12347%2Cfalse) Magnetism[Heartland AEA](http://www.heartlandaea.org/library-and-digital-resources/online-resources/k-5th-grade/) |

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| Weather and ClimateSEP- Analyze Data, Obtaining Information, Arguing from Evidence 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. |
| 3Learning Goal | Students will:1. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. ([3 ESS2-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/3-ESS2-1%20Evidence%20Statements%20June%202015%20asterisks.pdf))
2. Obtain and combine information to describe climates in different regions of the world. ([3 ESS2-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/3-ESS2-2%20Evidence%20Statements%20June%202015%20asterisks.pdf))
3. Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.\* ([3 ESS 3-1](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/3-ESS3-1%20Evidence%20Statements%20June%202015%20asterisks.pdf) , [3-5-ETS1-2](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/3-5-ETS1-2%20Evidence%20Statements%20June%202015%20asterisks-5.pdf))
 |
| 2 | Students will:1. 1. Organize seasonal weather data using tables, charts or graphs.

2. Identify and describe weather patterns for different seasons and areas.3. Use weather pattern data to make reasonable predictions about seasonal weather.1. 1. Use reliable media to gather information about regional climates.

2. Combine gathered information to show evidence of regional climate patterns.3. Use information to describe regional climate and weather patterns.4. Describe how pattern in climate can be used to predict typical weather patterns.1. 1. Describe a solution to a weather-related hazard.

2. Evaluate the evidence for a design solution based on given criteria and constraintsPotential vocabulary:Season, Weather, Predictions, Temperature, Wind direction, Precipitation, Rainfall, Climate |
| 1 | Student’s performance reflects insufficient progress towards foundational skills and knowledge. |

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| **Weather and Climate** |
| “**Big Idea”****Quantify weather into data tables and graphs to identify patterns (may be best if done throughout the year). Use a variety of sources to describe the different climates around the world. Finally support a claim to reduce the impact of weather-related hazards.** |
| FOSS Weather and Climate | Additional Resources |
| Investigation 3Part 1 Measuring Weather Teacher Guide pg 205Investigation 4 Teacher Guide pg 263Part 1 Seasonal Weather, 2 Describing Climate, 3 Weather Related Hazards | [Mystery Science](https://mysteryscience.com/weather/weather-climate-water-cycle) Stormy Skies[Pebble Go](https://www.pebblego.com/modules/2/categories/2995) Weather[Discovery Education](https://app.discoveryeducation.com/scienceelementary/concept?id=Earth&guid=5E08DC67-0123-4D5C-BDEC-4C429011C292) Weather and Climate[Heartland AEA](http://www.heartlandaea.org/library-and-digital-resources/online-resources/k-5th-grade/) |