



**MIDLAND PARK PUBLIC SCHOOLS**  
*Midland Park, New Jersey*  
**CURRICULUM**

# **Science**

# **Grade 3**

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*Approved by the Midland Park Board of Education on*  
*August 15, 2017*

## Grade 3 Science Curriculum Overview

Grade 3 science is taught in seven units throughout the school year. The science curriculum is a hands-on, open-ended and sequential process of investigating the biological and physical world. As part of the spiraling curriculum, aspects of physical science, life science, earth & space science, and engineering; technology & applications of science are taught throughout the year. A guided inquiry program gives students the opportunity to explore topics and concepts through investigations.

Participating in this hands-on program helps students:

1. To foster a life-long enjoyment of learning science.
2. To observe science in the world around them.
3. To meet the science standards for New Jersey Public Schools.

Suggested Course Sequence\*:

Unit 1: Weather and Climate: 15 days

Unit 2: Force and Motion: 15 days

Unit 3: Electrical and Magnetic Forces: 15 days

Unit 4: Traits: 15 days

Unit 5: Continuing the Cycle: 10 days

Unit 6: Organisms and the Environment: 15 days

Unit 7: Ecosystems: 15 days

Prerequisite: Grade 2 Science

*\*The number of instructional days is an estimate based on the information available at this time. 1 day equals approximately 42 minutes of seat time. Teachers are strongly encouraged to review the entire unit of study carefully and collaboratively to determine whether adjustments to this estimate need to be made.*

<b>Content Area:</b> Science	
<b>Unit Title:</b> Unit 1 Weather and Climate	
<b>Grade Level:</b> 3	
<p><b>Unit Summary:</b> In this unit of study, students organize and use data to describe typical weather conditions expected during a particular season. By applying their understanding of weather-related hazards, students are able to make a claim about the merit of a design solution that reduces the impacts of such hazards. The crosscutting concepts of <i>patterns, cause and effect</i>, and the <i>influence of engineering, technology, and science on society and the natural world</i> are called out as organizing concepts for these disciplinary core ideas. Students demonstrate grade-appropriate proficiency in <i>asking questions and defining problems, analyzing and interpreting data, engaging in argument from evidence, and obtaining, evaluating, and communicating information</i>. Students are also expected to use these practices to demonstrate understanding of the core ideas.</p>	
<b>Interdisciplinary Connections:</b>	
<b>21<sup>st</sup> Century Themes and Skills:</b>	
CRP1. Act as a responsible and contributing citizen and employee.	
CRP2. Apply appropriate academic and technical skills.	
CRP3. Attend to personal health and financial well-being.	
CRP4. Communicate clearly and effectively and with reason.	
CRP5. Consider the environmental, social and economic impacts of decisions.	
CRP6. Demonstrate creativity and innovation.	
CRP7. Employ valid and reliable research strategies.	
CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.	
CRP9. Model integrity, ethical leadership and effective management.	
CRP10. Plan education and career paths aligned to personal goals.	
CRP11. Use technology to enhance productivity.	
CRP12. Work productively in teams while using cultural global competence.	
<b>Standards (Content and Technology):</b>	
<b>CPI#:</b>	<b>Statement:</b>
NJSLS.ESS2.D	Develop a model using an analogy, to describe how weather and climate are related. (
<u>NJSLS.3-ESS2-1</u>	Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. [Clarification Statement: Examples of data could include average temperature, precipitation, and wind direction.] [Assessment Boundary: Assessment of graphical displays is limited to pictographs and bar graphs. Assessment does not include climate change.]
<u>NJSLS.3-ESS2-2</u>	Obtain and combine information to describe climates in different regions of the world.
<u>NJSLS.3-ESS3-1</u>	Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard. [Clarification Statement: Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, and lightning rods.]
NJSLS.8.1.5.A.1	Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
NJSLS.8.1.5.A.3	Use a graphic organizer to organize information about problem or issue.
<b>Unit Essential Question(s):</b>	
<ul style="list-style-type: none"> <li>Can we predict the kind of weather that we will see in the spring, summer, autumn, or winter?</li> </ul>	
<b>Unit Enduring Understandings:</b>	
<ul style="list-style-type: none"> <li>Patterns of change can be used to make predictions.</li> </ul>	

● *How can climates in different regions of the world be described?*

- People record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next.
- Patterns of change can be used to make predictions.
- Climate describes the range of an area's typical weather conditions and the extent to which those conditions vary over years.

**Unit Learning Targets/Objectives:**

*Students will...*

- Develop a model using an analogy, to describe how weather and climate are related.
- Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. *[Clarification Statement: Examples of data could include average temperature, precipitation, and wind direction.] [Assessment Boundary: Assessment of graphical displays is limited to pictographs and bar graphs. Assessment does not include climate change.] (3-ESS2-1)*
- Obtain and combine information to describe climates in different regions of the world. (3-ESS2-2)
- Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard. *[Clarification Statement: Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, and lightning rods.] (3-ESS3-1)*

**Formative Assessments:**

- Exit tickets/ entrance tickets
- Temperature gauge
- Teacher observations

[http://teacher.scholastic.com/activities/wwatch/gather\\_data/anemometer.htm](http://teacher.scholastic.com/activities/wwatch/gather_data/anemometer.htm)

**Summative/Benchmark Assessment(s):**

- DiscoveryEd Techbook Unit Assessment
- Develop a model using an analogy to describe how weather and climate are related.
- Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season
- Obtain and combine information to describe climates in different regions of the world.
- Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.

**Resources/Materials (copy hyperlinks for digital resources):**

- Discovery Techbook: <https://app.discoveryeducation.com/public:session/login#>
- Scholastic Forecasting the Weather interactive website <http://teacher.scholastic.com/activities/wwatch/analyze/index.htm>
- True Stories gathered from [www.scied.ucar.edu/webweather](http://www.scied.ucar.edu/webweather)

**Questions on the top of each story:**

- *How would you feel if you were in this weather related event?*
- *Would you do anything differently to make sure you stay safe?*
- Flash Floods- [dahttps://scied.ucar.edu/webweather/thunderstorms/true-story-wild-ride-during-flash-flood](https://scied.ucar.edu/webweather/thunderstorms/true-story-wild-ride-during-flash-flood)

- Lightning- <https://scied.ucar.edu/webweather/thunderstorms/close-encounter-with-lightning>
- Tornadoes- <https://scied.ucar.edu/webweather/tornadoes/tornadoes-soccer-field>
- Hurricanes- <https://scied.ucar.edu/webweather/hurricanes/surviving-hurricane-carla>
- Snow Storms- <https://scied.ucar.edu/webweather/winter-storms/adventures-snow>

Modifications:

Special Education Students

- Allow errors
- Rephrase questions, directions, and explanations
- Allow extended time to answer questions, and permit drawing, as an explanation
- Accept participation at any level, even one word
- Consult with Case Managers and follow IEP

● At-Risk Students

- Provide extended time to complete tasks
- Consult with Guidance Counselors and follow I&RS procedures/action plans
- Consult with classroom teacher(s) for specific behavior interventions
- Provide rewards as necessary

● English Language Learners

- Assign a buddy, same language or English speaking
- Allow errors in speaking
- Rephrase questions, directions, and explanations
- Allow extended time to answer questions
- Accept participation at any level, even one word

● Gifted and Talented Students

- Provide extension activities
- Build on students' intrinsic motivations
- Consult with parents to accommodate students' interests in completing tasks at their level of engagement

Lesson Plans

Lesson Name/Topic	Lesson Objective(s)	Time frame (day(s) to complete)
What's the weather?	Choose the weather you want And explore the factors that help us predict weather, and explore variables to get the weather they want.	2 days
Record / Collect	Collect Data: begin to chart and record data over a week.	2 days
Tools	Recognize the tools used for measuring weather conditions and understand their functions	2 days
Read / define	Know the definition of wind and weather	2 days
Wind	Understand why weather changes and what causes wind	2 days
Precipitation	Distinguish among various forms of precipitation	2 days
	Build a barometer out of simple items	2 days

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Around the world	Understand that there are different climate types all over the world.	2 days
Various climates	Recognize four types of climate: desert, tropical, temperate, and polar.	2 days
What's it like?	Demonstrate their understanding of climate types by acting out the characteristics of a specific type of climate.	2 days
Teacher Notes:		
Additional Resources Click links below to access additional resources used to design this unit: Mystery Science- <a href="#">Invisible Forces</a>		

**Content Area:** Science

**Unit Title:** Force and Motion

**Grade Level:** 3

**Unit Summary:** In this unit of study, students are able to determine the effects of balanced and unbalanced forces on the motion of an object. The crosscutting concepts of patterns and cause and effect are identified as organizing concepts for these disciplinary core ideas. In the third-grade performance expectations, students are expected to demonstrate grade-appropriate proficiency by planning and carrying out investigations. Students are expected to use these practices to demonstrate understanding of the core ideas.

**Interdisciplinary Connections:**

**21<sup>st</sup> Century**

- CRP1. Act as a responsible and contributing citizen and employee.
- CRP2. Apply appropriate academic and technical skills.
- CRP4. Communicate clearly and effectively and with reason.
- CRP5. Consider the environmental, social and economic impacts of decisions.
- CRP6. Demonstrate creativity and innovation.
- CRP7. Employ valid and reliable research strategies.
- CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
- CRP9. Model integrity, ethical leadership and effective management.
- CRP11. Use technology to enhance productivity.
- CRP12. Work productively in teams while using cultural global competence.

**Themes and Skills:**

**Standards (Content and Technology):**

<b>CPI#:</b>	<b>Statement:</b>
NJSLS.3-PS2-2	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion. [Clarification Statement: Examples of motion with a predictable pattern could include a child swinging in a swing, a ball rolling back and forth in a bowl, and two children on a see-saw.] [Assessment Boundary: Assessment does not include technical terms such as period and frequency.]
NJSLS.3-PS2-1 -	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.
NJSLS.3-PS2-1. 2.1 -	Cause and effect relationships are routinely identified.
NJSLS.3-PS2-1. 3.1	Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.
NJSLS.3-PS2-1. PS2.A.1	Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object's speed or direction of motion. (Boundary: Qualitative and conceptual, but not quantitative addition of forces are used at this level.)
NJSLS.3-PS2-1. PS2.B.1	Objects in contact exert forces on each other.
NJSLS.8.1.5.A. 1	Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
NJSLS.8.1.5.A. 3	Use a graphic organizer to organize information about problem or issue.

**Unit Essential Question(s):**

**Unit Enduring Understandings:**

<ul style="list-style-type: none"> <li>• What effect does a force have on the motion of an object?</li> <li>• What effect do balanced forces have on the motion of an object?</li> <li>• What effect do unbalanced forces have on the motion of an object?</li> <li>• How can one predict an object's continued motion, changes in motion, or stability?</li> </ul>	<ul style="list-style-type: none"> <li>• When a force is applied to an object, several things may happen.</li> </ul>
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**Unit Learning Targets/Objectives:**

*Students will...*

- Define force.
- Predict how different forces and combinations of forces will affect the motion of an object.
- Explain why a certain force has a particular effect on an object.

**Formative Assessments:**

- "Balanced and Unbalanced"
- "Types of Forces"
- "The Motion of an Object"
- Exit tickets/ entrance tickets
- Teacher observations

**Summative/Benchmark Assessment(s):**

- DiscoveryEd Techbook Unit Assessment

**Resources/Materials** (copy hyperlinks for digital resources):

**Modifications:**

**Special Education Students**

- Allow errors
- Rephrase questions, directions, and explanations
- Allow extended time to answer questions, and permit drawing, as an explanation
- Accept participation at any level, even one word
- Consult with Case Managers and follow IEP

• **English Language Learners**

- Assign a buddy, same language or English speaking
- Allow errors in speaking
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• **At-Risk Students**

- Provide extended time to complete tasks
- Consult with Guidance Counselors and follow I&RS procedures/action plans
- Consult with classroom teacher(s) for specific behavior interventions
- Provide rewards as necessary

• **Gifted and Talented Students**

- Provide extension activities
- Build on students' intrinsic motivations



- Consult with parents to accommodate students' interests in completing tasks at their level of engagement

Lesson Name/Topic	Lesson Objective(s)	Time frame (day(s) to complete)
Engage	In this session, students assess their prior knowledge about forces and the motion of objects and view a video segment about roller coasters.	1 day Unbalanced forces <u>Tug of War</u>
Explore	In this session, students are introduced to the Lesson Questions and the process of forming a Scientific Explanation.	1 day
Explore	In this session, students are introduced to Key Glossary Terms that will serve as a fundamental basis for this lesson.	<b><u>1 day</u></b>
Explore	In this session, students begin to investigate the Lesson Questions by exploring the Core Interactive Text.	1 day
Explain	In this session, students use their prior knowledge and evidence that they have gathered during previous sessions about force and motion to make claims using evidence and to create Scientific Explanations that answer the Lesson Questions.	1 day
Explore	In this session, students use marbles of different mass to observe how the mass of a marble influences how far it will travel after being struck by another marble.	1 day
Elaborate	In this session, students explore a Virtual Lab to investigate what effect certain variables have on the	2 days

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	motion of an object that is acted on by unbalanced forces.	
Evaluate	In this session, students are evaluated on their understanding of forces and motion.	1 day
<b>Teacher Notes:</b>		
<b>Additional Resources</b> Click links below to access additional resources used to design this unit:		

**Content Area:** Science

**Unit Title:** Electrical and Magnetic Forces

**Grade Level:** 3

**Unit Summary:** In this unit of study, students determine the effects of balanced and unbalanced forces on the motion of an object and the cause-and-effect relationships of electrical or magnetic interactions to define a simple design problem that can be solved with magnets. The crosscutting concept of *cause and effect*, and the *interdependence of science, engineering, and technology*, and the *influence of engineering, technology, and science on society and the natural world* are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in *asking questions and defining problems*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

**Interdisciplinary Connections:**

**21<sup>st</sup> Century**

**Themes and Skills:**

- CRP1. Act as a responsible and contributing citizen and employee.
- CRP2. Apply appropriate academic and technical skills.
- CRP3. Attend to personal health and financial well-being.
- CRP4. Communicate clearly and effectively and with reason.
- CRP5. Consider the environmental, social and economic impacts of decisions.
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- CRP9. Model integrity, ethical leadership and effective management.
- CRP10. Plan education and career paths aligned to personal goals.
- CRP11. Use technology to enhance productivity.
- CRP12. Work productively in teams while using cultural global competence.

**Standards (Content and Technology):**

<b>CPI#:</b>	<b>Statement:</b>
NJSLS.3-PS2-3	Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.
NJSLS.3-PS2-3.1.1	Ask questions that can be investigated based on patterns such as cause and effect relationships.
NJSLS.3-PS2-3.2.1	Cause and effect relationships are routinely identified, tested, and used to explain change.
NJSLS.3-PS2-3.PS2.B.1	Electric, and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other.
NJSLS.3-PS2-4-	Define a simple design problem that can be solved by applying scientific ideas about magnets.
NJSLS.3-PS2-4.1.1 -	Define a simple problem that can be solved through the development of a new or improved object or tool.
NJSLS.3-PS2-4.PS2.B.1 -	Electric, and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other.

NJSLS.8.1.5.A. 1	Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
NJSLS.8.1.5.A. 3	Use a graphic organizer to organize information about problem or issue.
<p><b>Unit Essential Question(s):</b></p> <ul style="list-style-type: none"> <li>● How can one explain and predict interactions between objects and within systems of objects?</li> <li>● What underlying forces explain the variety of interactions observed?</li> </ul>	<p><b>Unit Enduring Understandings:</b></p> <ul style="list-style-type: none"> <li>● Magnets produce a field of <u>force</u> called magnetism. This force allows the magnet to pull certain materials toward itself and pull/push other magnets away.</li> <li>● Magnetism affects certain objects that are in its <u>magnetic field</u>.</li> </ul>
<p><b>Unit Learning Targets/Objectives:</b> <i>Students will...</i></p> <ul style="list-style-type: none"> <li>● Explain how electrons transfer from one object to another, creating static electricity.</li> <li>● Know that static electricity causes objects of the same charge to repel and objects of opposite charges to attract.</li> <li>● Know that static can sometimes be released as a spark, and that lightning is one example of this.</li> <li>● Build a system to investigate how static electricity works.</li> <li>● Understand that magnets can both attract and repel other magnets</li> <li>● Know that magnets attract only iron, nickel, and cobalt</li> <li>● Conduct a simple experiment to observe how magnets have two poles</li> <li>● Draw a picture that shows how the poles of magnets can attract and repel each other</li> <li>● Explain that electrical energy can be transformed into light, heat, sound, and motion</li> <li>● Describe how electricity can create magnetism</li> <li>● Describe how magnets can create electricity</li> <li>● Understand that all electrical motors need both electricity and magnets</li> <li>● Build a simple electromagnet</li> <li>● Test variables to learn more about the function of the electromagnet</li> </ul>	

**Formative Assessments:**

- Exit tickets/ entrance tickets
- Teacher observations

**Summative/Benchmark Assessment(s):**

- DiscoveryEd Techbook Unit Assessment

**Resources/Materials (copy hyperlinks for digital resources):**

**Modifications:**

**Special Education Students**

- Allow errors
- Rephrase questions, directions, and explanations
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- **Gifted and Talented Students**

- Provide extension activities
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- Consult with parents to accommodate students' interests in completing tasks at their level of engagement

Lesson Name/Topic	Lesson Objective(s)	Time frame (day(s) to complete)
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STATIC ELECTRICITY

<p>Static Electricity Introduction</p>	<p>Static Electricity Conversation</p> <p>Static Cling/ Electricity: Brainstorm with a partner where you have seen this in your life? What caused it? Electrons can be stored as static. Gone down a slide and get a shock. IN addition to electrons, atoms also have protons. Positive and negative attract (know from magnetism-review. magnetism).</p> <p>Lesson Questions:</p> <ul style="list-style-type: none"> <li>● What is static electricity?</li> <li>● When does a static charge build up on an object?</li> <li>● What happens when a static charge builds up on an object?</li> <li>● What is an example from nature of static electricity?</li> </ul> <p>Teachergeek.com</p> <p>Start with Static Electricity Lab</p> <p>Vocabulary:</p> <ul style="list-style-type: none"> <li>● Atom - the smallest unit of matter</li> <li>● Nucleus - Center of an atom that has the protons and neutrons</li> <li>● Neutron - part of the atom that does not have a charge - it is neutral</li> <li>● Proton- found in the nucleus of an atom. Has a positive charge</li> <li>● Electron - part of the atom found outside the nucleus. Has a negative charge.</li> <li>● Positive Charge - An electric charge with more protons than electrons</li> <li>● Negative Charge - an electrical charge in which there is a build up of electrons</li> <li>● Attract - to pull towards</li> <li>● Repel- to force an object away or to keep it away</li> <li>● Static Electricity - electric charges that build up on an object</li> </ul> <p>Examples from nature</p>	<p>2-3 days</p>
<p>Conduct an experiment and draw conclusions</p>	<p>Materials : wool scarves, combs, pick up paper towel</p> <p>Vocabulary: Insulator Conductor:</p> <p>Learn parts of an atom Electrical charges</p>	<p>1 day</p>
	<p>Edtech "Session 2" Written explanation.</p>	<p>2 days</p>

	<p>Model general explanation Vs. scientific explanation. Brainstorm with class words/ phrases you may want to use in your scientific explanation for static electricity [shock, energy? ] Use science textbook page B74-75 as a resource. Electric charges.</p>	
<b>MAGNETISM</b>		
<p><b>LAB: Mystery Bags</b></p>	<p><b>Investigation- Mystery Bags</b> Magnets interact with other objects</p> <p>Scientific Method <b>Question-</b> What objects are magnetic? <b>Hypothesis-</b> Determine if the object will stick or not. <b>Conduct Experiment</b> <b>Draw Conclusions-</b> Why did certain objects stick together?</p> <p>What objects are magnetic? Identify properties of magnets. Identify poles on a magnet and forces. Why does it stick to certain? Magnetics interact with each other</p> <p><b>Vocabulary</b></p> <ul style="list-style-type: none"> <li>● <b>Magnet - an object with a north and south pole that produces a magnetic field</b></li> <li>● <b>Pole - the opposite ends of a battery, a magnet, or the north and south ends of the Earth</b></li> <li>● <b>Attract - to pull towards</b></li> <li>● <b>Repel- to force an object away or to keep it away</b></li> </ul> <p><b>Student Recording Sheet</b></p>	<p>1 day</p>
<p>Design your own Experiment</p>	<p>Design a simple cause and effect electrical or magnet</p> <p>Design your own Experiment How can we use our understandings about magnets be used to solve problems?</p> <ul style="list-style-type: none"> <li>- Scientific discoveries about the natural world can often lead to new and improved technologies, which are developed through the engineering design process.</li> <li>- People’s needs and wants change over time, as do their demands for improved technologies</li> <li>-</li> </ul> <p>How can you solve an everyday problem using magnets? Brainstorm- Come up with a problem</p> <p><b>Sample:</b></p> <ul style="list-style-type: none"> <li>● Sports</li> <li>● Accessories- close a purse</li> <li>● Fidget Spinners</li> <li>● Classroom Issues- desks, whiteboards, job charts, library labels</li> <li>● Refrigerators</li> <li>● Credit Cards</li> </ul>	<p>1 day</p>

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	<ul style="list-style-type: none"><li>• How can you use magnets to move an object?</li></ul>	
<b>LAB:</b> <i>How is energy transformed?</i>	Understand open and closed circuits to show how electrical energy can be transformed into light, heat, sound and motion	2 days
<b>Teacher Notes:</b>		
<b>Additional Resources</b> Click links below to access additional resources used to design this unit:		



### Unit Overview

**Content Area:** Science

**Unit Title:** Traits

**Grade Level:** 3

**Unit Summary:**

In this unit of study, students acquire an understanding that organisms have different inherited traits and that the environment can also affect the traits that an organism develops. The crosscutting concepts *patterns* and *cause and effect* are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency *in analyzing and interpreting data, constructing explanations, and designing solutions*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

**Interdisciplinary Connections:**

**21<sup>st</sup> Century Themes and Skills:**

- CRP1. Act as a responsible and contributing citizen and employee.
- CRP2. Apply appropriate academic and technical skills.
- CRP3. Attend to personal health and financial well-being.
- CRP4. Communicate clearly and effectively and with reason.
- CRP5. Consider the environmental, social and economic impacts of decisions.
- CRP6. Demonstrate creativity and innovation.
- CRP7. Employ valid and reliable research strategies.
- CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
- CRP9. Model integrity, ethical leadership and effective management.
- CRP10. Plan education and career paths aligned to personal goals.
- CRP11. Use technology to enhance productivity.
- CRP12. Work productively in teams while using cultural global competence.

### Learning Targets

**Standards (Content and Technology):**

CPI#:	Statement:
NJSLS.3-LS3-1	<b>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.</b> <i>[Clarification Statement: Patterns are the similarities and differences in traits shared between offspring and their parents, or among siblings. Emphasis is on organisms other than humans.] [Assessment Boundary: Assessment does not include genetic mechanisms of inheritance and prediction of traits. Assessment is limited to non-human examples.]</i>
NJSLS.3-LS3-2	<b>Use evidence to support the explanation that traits can be influenced by the environment.</b> <i>[Clarification Statement: Examples of the environment affecting a trait could include normally tall plants grown with insufficient water are stunted; and, a pet dog that is given too much food and little exercise may become overweight.]</i>
NJSLS.3-LS3-2.L S3.A.1	Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment.
NJSLS.3-LS3-2.L S3.B.1	The environment also affects the traits that an organism develops.
NJSLS.8.1.5.A. 1	Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
NJSLS.8.1.5.A. 3	Use a graphic organizer to organize information about problem or issue.

<p><b>Unit Essential Question(s):</b></p> <ul style="list-style-type: none"> <li>● What kinds of traits are passed on from parent to offspring?</li> <li>● What environmental factors might influence the traits of a specific organism?</li> </ul>	<p><b>Unit Enduring Understandings:</b></p> <ul style="list-style-type: none"> <li>● Behavior is how an organism reacts to stimuli, or conditions in its environment.</li> <li>● Living things react to stimuli, such as predators, heat, cold, and hunger.</li> <li>● Organisms inherit some behaviors from their parents. Other behaviors are learned over time.</li> </ul>
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**Unit Learning Targets/Objectives:**

*Students will...*

- List what types of traits are passed on from parent to offspring
- Explain that behavior is a response to a stimulus
- Give examples of behaviors in the natural world
- Observe and record how humans react to certain stimuli
- Distinguish between inherited and learned behaviors
- Describe how parents pass inherited traits to their offspring.
- Describe how heredity affects an organism's appearance and behavior.
- Compare the traits of parents and offspring.
- Distinguish between traits that are inherited and traits that are not inherited.

**Formative Assessments:**

- Exit tickets/ entrance tickets
- Teacher observations
- DiscoveryEd Techbook Unit Assessment

**Summative/Benchmark Assessment(s):**

- DiscoveryEd Techbook Unit Assessment

**Resources/Materials** (copy hyperlinks for digital resources):

<http://teach.genetics.utah.edu/content/heredity/#2>

<http://buncombe.k12.nc.us/page/30134>

**Modifications:**

**Special Education Students**

- Allow errors
- Rephrase questions, directions, and explanations
- Allow extended time to answer questions, and permit drawing, as an explanation
- Accept participation at any level, even one word
- Consult with Case Managers and follow IEP

● **At-Risk Students**

- Provide extended time to complete tasks
- Consult with Guidance Counselors and follow I&RS procedures/action plans
- Consult with classroom teacher(s) for specific behavior interventions
- Provide rewards as necessary

● **English Language Learners**

● **Gifted and Talented Students**

- Assign a buddy, same language or English speaking
- Allow errors in speaking
- Rephrase questions, directions, and explanations
- Allow extended time to answer questions
- Accept participation at any level, even one word
- Provide extension activities
- Build on students' intrinsic motivations
- Consult with parents to accommodate students' interests in completing tasks at their level of engagement

Lesson Name/Topic	Lesson Objective(s)	Time frame (day(s) to complete)
<b>Behavior</b>	SWBAT identify why animals act the way they do	1
<b>Behavior Vocabulary</b>	Students will engage in constructing explanations and designing solutions when they study the glossary terms to make sense of learning in animals.	2
<b>Behavior Observations</b>	Students will observe behaviors and describe why organisms behave the way they do	2
<b>Types of Traits</b>	Students determine the difference between inherited and learned traits	2
<b>Inheritance vs. Environment</b>	Students will compare and contrast inherited vs. environmental traits	1
<b>Apple Taste Test</b>	Students will develop an understanding of how traits passed on	2 (can be shortened to 1 session, if needed)
<b>Environmental Factors - Where do plants grow best?</b>	Students will develop an understanding of how the environment affects plant growth	1
<b>Animal Adaptations</b>	Students will select an animal to explore and explain how it is affected by its	2
	Students will take an assessment on their understanding of traits, inheritance, and environment	1

**Teacher Notes:**

Ongoing project option- Have students choose an animal in their community and observe its behavior. If possible, students should observe the animal over the course of several days, and at different times of the day. Tell students to keep a log recording their observations.

<https://njctl.org/courses/science/3rd-grade-science/>

**Additional Resources**

Click links below to access additional resources used to design this unit:

<b>Content Area:</b> Science	
<b>Unit Title:</b> Continuing the Cycle	
<b>Grade Level:</b> 3	
<p><b>Unit Summary:</b> In this unit of study, students develop an understanding of the similarities and differences in organisms' life cycles. In addition, students 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. The crosscutting concepts of <i>patterns</i> and <i>cause and effect</i> are called out as organizing concepts for these disciplinary core ideas. Students demonstrate grade-appropriate proficiency in <i>developing and using models and constructing explanations and designing solutions</i>. Students are also expected to use these practices to demonstrate understanding of the core ideas.</p>	
<b>Interdisciplinary Connections:</b>	
<b>21<sup>st</sup> Century Themes and Skills:</b>	
CRP1. Act as a responsible and contributing citizen and employee.	
CRP2. Apply appropriate academic and technical skills.	
CRP3. Attend to personal health and financial well-being.	
CRP4. Communicate clearly and effectively and with reason.	
CRP5. Consider the environmental, social and economic impacts of decisions.	
CRP6. Demonstrate creativity and innovation.	
CRP7. Employ valid and reliable research strategies.	
CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.	
CRP9. Model integrity, ethical leadership and effective management.	
CRP10. Plan education and career paths aligned to personal goals.	
CRP11. Use technology to enhance productivity.	
CRP12. Work productively in teams while using cultural global competence.	
<b>Standards (Content and Technology):</b>	
<b>CPI#:</b>	<b>Statement:</b>
NJSLS.3-LS1-1.	Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.
NJSLS.LS1.B:	Growth and Development of Organisms: Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles.
NJSLS.8.1.5.A. 1	Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
NJSLS.8.1.5.A. 3	Use a graphic organizer to organize information about problem or issue.
<b>Unit Essential Question(s):</b> <ul style="list-style-type: none"> <li>How do organisms live, grow, respond to their environment, and reproduce?</li> <li>How do organisms grow and develop?</li> </ul>	<b>Unit Enduring Understandings:</b> <ul style="list-style-type: none"> <li>Although there are many ways that plants can reproduce, their overall life cycles are all the same.</li> <li>It is through this continual process of growing and reproducing that plant species survive.</li> </ul>
<b>Unit Learning Targets/Objectives:</b>	

**Students will...**

- Describe the stages of the plant life cycle.
- Explain why plants must produce seeds or spores.
- Describe how a plant changes throughout its life cycle.
- Identify the stages of an animal's life cycle.
- Sequence stages in the life cycles of various animals.
- Describe how some animals change in appearance throughout their life cycle.
- Compare and contrast how different animals reproduce.
- Explain that organisms can only come from their own kind of organism.

**Formative Assessments:**

- Quiz on plant life cycles
- Teacher observations

**Summative/Benchmark Assessment(s):**

- Animal Life Cycles Project
- DiscoveryEd Techbook Unit Assessment

**Resources/Materials** (copy hyperlinks for digital resources):

**Modifications:**

**Special Education Students**

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- Consult with classroom teacher(s) for specific behavior interventions
- Provide rewards as necessary

● **Gifted and Talented Students**

- Provide extension activities
- Build on students' intrinsic motivations
- Consult with parents to accommodate students' interests in completing tasks at their level of engagement

Midland Park Public Schools

Lesson Name/Topic	Lesson Objective(s)	Time frame (day(s) to complete)
<b>Seeds</b>	Students will observe seeds and study pollination	1
<b>Plants</b>	Students will learn about pollination and will create a model of a flower	2
<b>What are the stages of the life cycle of a plant?</b>	In this lesson, students learn to identify similarities and differences in plant life cycles in order to classify these phenomena. (session 2)	1
<b>How do plants change and grow throughout their life cycle?</b>	Students will explain how plants reproduce through spores, seeds, and cones.	1
<b>Life cycles of plants</b>	Students will summarize different stages in the life cycles of flowering and non-flowering plants.	1
<b>Assessment</b>	Students will take a formative assessment on seeds, pollination, and life cycle	1
<b>Animal Life Cycles</b>	Students will study the life cycle of an animal. They will select an organism and use a Venn diagram to compare and contrast the similarities and differences between the organism at birth and as an adult.	1
<b>Animal Life Cycles Part I</b>	Students will form groups and write a short summary of the importance of their stage to add to the class life cycle.	2
<b>Animal Life Cycles: Part II</b>	Students will select an animal to research and identify the life cycle and characteristics of the animal.	2
<b>Reproduction</b>	Students will learn how different organisms reproduce.	2

**Teacher Notes:**

Challenge- consider endangered species project- In this summative assessment STEM project, students interpret current information about endangered species. They read a data chart to learn more about the extent of this global issue.

**Additional Resources**

Click links below to access additional resources used to design this unit:

**Content Area:** Science

**Unit Title:** Organisms and the Environment

**Grade Level:** 3

**Unit Summary:** In this unit of study, students develop an understanding of the idea that when the environment changes, some organisms survive and reproduce, some move to new locations, some move into the transformed environment, and some die. The crosscutting concepts of *cause and effect* and the *interdependence of science, engineering, and technology* are called out as organizing concepts for these disciplinary core ideas. Students demonstrate grade-appropriate proficiency in *engaging in argument from evidence*. Students are also expected to use this practice to demonstrate understanding of the core ideas

**Interdisciplinary Connections:**

**21<sup>st</sup> Century**

- CRP1. Act as a responsible and contributing citizen and employee.
- CRP2. Apply appropriate academic and technical skills.
- CRP4. Communicate clearly and effectively and with reason.
- CRP5. Consider the environmental, social and economic impacts of decisions.
- CRP6. Demonstrate creativity and innovation.
- CRP7. Employ valid and reliable research strategies.
- CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
- CRP9. Model integrity, ethical leadership and effective management.
- CRP10. Plan education and career paths aligned to personal goals.
- CRP11. Use technology to enhance productivity.
- CRP12. Work productively in teams while using cultural global competence.

**Themes and Skills:**

**Standards (Content and Technology):**

<b>CPI#:</b>	<b>Statement:</b>
NJSLS.3-LS4-3.	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.
NJSLS.LS4.C:	Adaptation: For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all.
NJSLS.3-LS2-1 NJSLS.3-LS2-1.2.1 NJSLS.3-LS2-1.7.1 NJSLS.3-LS2-1. NJSLS.3-LS2.D.1	Construct an argument that some animals form groups that help members survive. Cause and effect relationships are routinely identified and used to explain change. Construct an argument with evidence, data, and/or a model. Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size.
NJSLS.3-LS4-1 NJSLS.3-LS4-1.3.1 NJSLS.3-LS4-1.4.1 NJSLS.3-LS4-1.LS4.A.1 NJSLS.3-LS4-1.LS4.A.2	Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago. Observable phenomena exist from very short to very long time periods. Analyze and interpret data to make sense of phenomena using logical reasoning. Some kinds of plants and animals that once lived on Earth are no longer found anywhere. Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments.



<p>NJSLS.8.1.5.A.1</p>	<p>Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.</p>				
<p>NJSLS.8.1.5.A.3</p>	<p>Use a graphic organizer to organize information about problem or issue.</p>				
<p><b>Unit Essential Question(s):</b></p> <ul style="list-style-type: none"> <li>● How can there be so many similarities among organisms yet so many different kinds of plants, animals, and microorganisms?</li> <li>● What affects an organism’s survival in a habitat?</li> <li>● How do living and nonliving organisms interact?</li> </ul>	<p><b>Unit Enduring Understandings:</b></p> <ul style="list-style-type: none"> <li>● Animals interact with their environment to sustain life</li> <li>● When there is a change in an ecosystem, it may disrupt the lives of many organisms living there.</li> <li>● Species that can adapt to a change in their environment will be more likely to survive and reproduce.</li> </ul>				
<p><b>Unit Learning Targets/Objectives:</b>  <i>Students will...</i></p> <ul style="list-style-type: none"> <li>● Explain what a habitat is.</li> <li>● Describe an organism's basic needs.</li> <li>● Recognize the ways in which habitats meet the needs of the organisms living in them.</li> <li>● Identify both living and nonliving things that are found in a habitat.</li> </ul>					
<p><b>Formative Assessments:</b></p> <ul style="list-style-type: none"> <li>● Exit tickets/ entrance tickets</li> <li>● Teacher observations</li> </ul> <p><b>Summative/Benchmark Assessment(s):</b></p> <ul style="list-style-type: none"> <li>● DiscoveryEd Techbook Unit Assessment</li> </ul> <p><b>Resources/Materials</b> (copy hyperlinks for digital resources):</p>					
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Lesson Name/Topic	Lesson Objective(s)	Time frame (day(s) to complete)
Needs	Students will determine the needs of plants and animals. Use formative assessment "water habitat" and "desert plants" to guide instruction.	1
Searching for needs	Students will identify what organisms needs from their environment and how they find things in their environment/habitat.	1
Survival in a habitat	Students will determine how some organisms better able to survive in a habitat than others.	1
Habitat Changes	Students will research and report on a habitat change that has occurred or is pending in their local area.	3
Behavior	Students will discover how an animal's structure or behavior help it to survive in its habitat	1
Survival Project	Students will devise a plan for a habitat that a selected animal will foster in.	3
Survival Project Presentations	Students will present their plans to the class.	1
	Students will take an assessment to demonstrate their knowledge on the survival and extinction of organisms in an environment	1

**Teacher Notes:**

**Additional Resources**

Click links below to access additional resources used to design this unit:

<https://njctl.org/courses/science/3rd-grade-science/>

<b>Content Area:</b> Science	
<b>Unit Title:</b> Ecosystems	
<b>Grade Level:</b> 3	
<p><b>Unit Summary:</b> In this unit of study, students develop an understanding of the types of organisms that lived long ago and also about the nature of their environments. Students develop an understanding of the idea that when the environment changes, some organisms survive and reproduce, some move to new locations, some move into the transformed environment, and some die. The crosscutting concepts of <i>systems and system models; scale, proportion, and quantity; and the influence of engineering, technology, and science on society and the natural world</i> are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in <i>asking questions and defining problems, analyzing and interpreting data, and engaging in argument from evidence</i>. Students are also expected to use these practices to demonstrate understanding of the core ideas.</p>	
<b>Interdisciplinary Connections:</b>	
<b>21<sup>st</sup> Century</b>	
CRP1. Act as a responsible and contributing citizen and employee.	
CRP2. Apply appropriate academic and technical skills.	
CRP3. Attend to personal health and financial well-being.	
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CRP12. Work productively in teams while using cultural global competence.	
<b>Themes and Skills:</b>	
<b>Standards (Content and Technology):</b>	
<b>CPI#:</b>	<b>Statement:</b>
NJSLS.3-LS4-1	Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago. [Clarification Statement: Examples of data could include type, size, and distributions of fossil organisms. Examples of fossils and environments could include marine fossils found on dry land, tropical plant fossils found in Arctic areas, and fossils of extinct organisms.] [Assessment Boundary: Assessment does not include identification of specific fossils or present plants and animals. Assessment is limited to major fossil types and relative ages.]
NJSLS.3-LS4-4	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. [Clarification Statement: Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms.] [Assessment Boundary: Assessment is limited to a single environmental change. Assessment does not include the greenhouse effect or climate change.]
NJSLS.3-LS4-3	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. [Clarification Statement: Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other.]
NJSLS.8.1.5.A. 1	Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.

<p>NJSLS.8.1.5.A. 3</p>	<p>Use a graphic organizer to organize information about problem or issue.</p>			
<p><b>Unit Essential Question(s):</b></p> <ul style="list-style-type: none"> <li>● How do animals and plants in an ecosystem depend on each other?</li> <li>● What helps plants and animals survive in certain environments?</li> <li>● How and why do organisms interact with their environment and what are the effects of these interactions?</li> </ul>	<p><b>Unit Enduring Understandings:</b></p> <ul style="list-style-type: none"> <li>● Living things depend on nonliving things like air, water, sunlight, and wind for survival.</li> <li>● Living things interact with one another in different ways in the same ecosystem.</li> <li>● An entire food chain can be affected when one species disappears.</li> </ul>			
<p><b>Unit Learning Targets/Objectives:</b> <i>Students will...</i></p> <ul style="list-style-type: none"> <li>● construct an argument with evidence that some animals form groups to survive in their ecosystem.</li> <li>● analyze and interpret data from fossils to give evidence of organisms that lived long ago.</li> <li>● construct an argument with evidence of adaptations that plants and animals use to survive in their habitat.</li> <li>● identify the effects of an environment change on the plants and animals within an ecosystem.</li> <li>● make a claim about the importance of a solution to a problem caused by an environmental change</li> </ul>				
<p><b>Formative Assessments:</b></p> <ul style="list-style-type: none"> <li>● Exit tickets/ entrance tickets</li> <li>● Teacher observations</li> </ul> <p><b>Summative/Benchmark Assessment(s):</b></p> <ul style="list-style-type: none"> <li>● DiscoveryEd Techbook Unit Assessment</li> </ul> <p><b>Resources/Materials</b> (copy hyperlinks for digital resources):</p>				
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Lesson Name/Topic	Lesson Objective(s)	Time frame (day(s) to complete)
Living Things	Students will identify how living and nonliving things depend on each other. (session 1)	1
Changes	Students will learn how short term changes can affect an ecosystem	1
Human Influences	Students will learn how humans can create short term changes on an ecosystem	1
Population Changes	Students will identify causes and effects of population change	2
Population Increases	Students will evaluate the following statement, and then prepare a written response with their opinion, supported by evidence and reasoning: "People should do everything they can to increase all populations of living things on Earth."	1
Natural Changes	Have students return to the CIT to explore natural changes to ecosystems, taking notes as they read the on-screen text and view the video segments. Students will determine what can cause ecosystems to change naturally over short periods of time.	1
Brochure	Students create a brochure for a national park or other ecologically sensitive area that explains to visitors what they can do to protect the environment and thus the populations within it, and why those conservation measures are important.	3
	Students will take a summative assessment on ecosystems	1

**Teacher Notes:**

Study and build/ construct an ecosystem

**Additional Resources**

Midland Park Public Schools

Click links below to access additional resources used to design this unit:

<https://nictl.org/courses/science/3rd-grade-science/ecosystems-group-behavior/>

Culminating Activity: [http://www.worldbookonline.com/training/science\\_power/sciencepower /extn\\_act.htm](http://www.worldbookonline.com/training/science_power/sciencepower/extn_act.htm)

Helpful Resources:

- <http://studyjams.scholastic.com/studyjams/jams/science/index.htm>
- <http://www.brainpopjr.com/games/foodchaingame/>