

Beach Haven School District

Science Curriculum

Grade 1

Original Adoption: September 12, 2016
Created By: Lisa Wentzell-Little Egg Harbor, Michael Dunlea-Stafford, Stephanie Mahr-Tuckerton
Revised on: June 22, 2022
Revised by: Jill Falletta
Proposed Revision Date: Summer 2025

Recommended Pacing Guide	
Unit 1: Engineering and Technology	30 days- ongoing
Unit 2: Sound	30 days- ongoing
Unit 3: Light	30 days- ongoing
Unit 4: Plant and Animal Structures	30 days- ongoing
Unit 5: Living Things and Their Young	30 days- ongoing
Unit 6: Objects and Patterns in the Sky	30 days- ongoing

Unit 1: Engineering and Technology	Duration: 30 days- ongoing
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Standards/Learning Targets

New Jersey Student Learning Standards:

- K-2-ETS1-1 Ask questions, make observations, and gather information about a situation people want to change (e.g., climate change) to define a simple problem that can be solved through the development of a new or improved object or tool.
- K-2-ETS1-2 Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
- K-2-ETS1-3 Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Correlation Chart

- **EDI**

Technology Standards:

- 8.1.2.A.1 Identify the basic features of a digital device and explain its purpose.
- 8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
- 8.2.2.C.1 Brainstorm ideas on how to solve a problem or build a product
- 8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.
- 8.2.2.E.1 List and demonstrate the steps to an everyday task

Career Ready Practices:

- CRP1. Act as a responsible and contributing citizen and employee.
- CRP4. Communicate clearly and effectively and with reason.
- CRP12. Work productively in teams while using cultural global competence.

21st Century Life and Career Standards:

- 9.1.4.A.1- Explain the difference between a career and a job, and identify various jobs in the community and the related earnings.

Suggested Accommodations**English Language Learners:**

- Labeled pictures of academic skill
- Using tactile objects to relate to key ideas.
- Chunk/limit information
- Speak slowly
- Limit number of questions
- Partner with a strong English speaking partner
- Extended time
- Modified assignments

Special Education//Students with Disabilities:

- Follow specific IEP accommodations and modifications
- Extended time
- Modified assignments
- Labeled pictures of weather phenomenon
- Pre-teach concepts
- Differentiate assignments
- Allow alternate assignments and assessment

504:

- Follow specific 504 accommodations and modifications
- Extended time
- Modified assignments
- Labeled pictures of weather phenomenon
- Pre-teach concepts
- Differentiate assignments
- Allow alternate assignments and assessment

Gifted and Talented:

- Differentiate assignments
- Higher level texts
- Complete different homework problems than peers
- Differentiate test questions
- Create alternate projects or assignments that challenge thinking
- Reference and possibly apply assessment boundary skills

Students at Risk of Failure:

- Small group instruction
- Frequent breaks
- Model how assignments should look
- Incorporate social/emotional discussions
- Encourage and monitor positive peer collaboration

- Provide academic resources for both home and school use
- Provide incentives to increase motivation and collaboration

Economically Disadvantaged:

- Provide clear, achievable expectations, do not lower academic requirements for them.
- Build a safe and nurturing atmosphere
- Perspective and experiences of the children need to be considered
- Create ways for students to share their emotions
- Give every student the same opportunity for success.
- Offer tutoring. Thirty or forty minutes a few times a week can dramatically increase a disadvantaged child's achievement level
- Assemble a packet with information and expectations for each class.
- Be flexible with assignments
- Allow students to finish assignments independently, or give them the opportunity to complete tasks at their own pace.
- Talk with parents about class expectations and the challenges of changing schools mid-year.
- Use real-world examples and create mental models for abstract idea
- Provide increased knowledge base and vocabulary use about real world experiences.
- Share the decision making in class.
- Maintain expectations while offering choice and soliciting input (e.g., "Would you rather do your rough draft now or gather some more ideas first?").
- Model the process of adult thinking.
- Discipline through positive relationships, not by exerting power or authority.
- Use a variety of classroom strategies that strengthen social and emotional skills
- Create a familial atmosphere by using inclusive and affiliative language
- Build supportive relationships, provide positive guidance, foster hope and optimism, and take time for affirmation and celebration.
- Provide access to computers, magazines, newspapers, and books so low-income students can see and work with printed materials
- Daily affirmations
- Asking to hear students' hopes and offering reinforcements of those hopes
- Telling students why they can succeed
- Providing needed academic resources (paper, pencils, computer time)
- Helping students to set goals and build goal-setting skills

Culturally Diverse:

- Involve families in student learning
- Consult with tribes and tribal education departments
- Provide social/emotional support
- Respect cultural traditions
- Build in more group work to encourage interaction with peers
- Show photos, videos, and definitions when possible for culturally unique vocabulary
- Help students feel more comfortable by learning about their cultural background
- Provide immediate praise and feedback
- Provide high interest topics/options
- Provide road maps or outlines for difficult concepts
- Provide sufficient wait time before calling on any student to help keep students who may need more time engaged
- Create a nurturing environment with structured routines
- Teach study skills
- Provided students with necessary academic resources and materials
- Allow for alternative assignments
- Provide visuals
- Assign peer tutor

- Allow students to demonstrate knowledge through alternative assessments Asian, Native Hawaiian/ Other Pacific Islanders
- Greater accommodation of English language learner students on assessment tests and in the classroom,
- Allocation of more resources to involve parents who are non-native English speakers
- Familiarize themselves with the values, traditions, and customs of various cultures; and learn the migratory conditions specific to each of their students' families.
- Learn at least a few words of their Asian students' native languages. By showing such interest, teachers can set the tone for better communication.
- Collaborate with language professionals and ESL teachers
- Encourage parents to help children maintain their native language at home, while the school helps the child attain proficiency in English.
- Teachers have a clear sense of their own ethnic and cultural identities.
- Teachers communicate high expectations for the success of all students and a belief that all students can succeed.
- Teachers provide a "scaffolding" that links the academically challenging curriculum to the cultural resources that students bring to school.
- Teachers explicitly teach students the culture of the school and seek to maintain students' sense of ethnocultural pride and identity
- Maintain high standards and demonstrate high expectations for all ethnically, culturally, and linguistically diverse students.

Evidence of Student Learning

Formative Tasks:

- Exit slips
- Analysis of student work
- Teacher observations
- Science journals
- Graphic Organizers
- Cooperative Group Learning

Alternative Assessments:

- Class discussion rubric
- Participation rubric
- Drawn/verbal explanations
- Modified quizzes/classwork

Summative Assessments:

- End of unit assessment

Benchmark Assessments:

- Pre-Unit Assessments
- On-the-fly Assessments

Knowledge & Skills

Enduring Understandings:

- A situation that people want to change or create can be approached as a problem to be solved through engineering.
- Asking questions, making observations, and gathering information are helpful in thinking about problems.
- The shape and stability of structures of natural and designed objects are related to their function(s).
- Before beginning to design a solution, it is important to clearly understand the problem.
- Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating

Essential Questions:

- How are asking questions, gathering information, and making observation helpful when thinking about problems?
- How does sketching or creating a model to illustrate its shape help solve a given problem?
- How does testing a model determine its strengths and weaknesses in solving a given problem?

ideas for a problem's solutions to other people.	
Core Instructional & Supplemental Materials	
Suggested Activities/Resources: <ul style="list-style-type: none"> • https://www.brainpop.com/science/ • https://betterlesson.com/browse/next_gen_science • Mystery Science • HMH Science dimensions 	Varied Levels of Text: <ul style="list-style-type: none"> • How Machines Work: Zoo Break! by David Macauley • Rosie Revere, Engineer by Andrea Beaty • Papa's Mechanical Fish by Candace Fleming

Unit 2: Sound	Duration: 30 days- ongoing
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Standards/Learning Targets

1-PS4-1- Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. [Clarification Statement: Examples of vibrating materials that make sound could include tuning forks and plucking a stretched string. Examples of how sound can make matter vibrate could include holding a piece of paper near a speaker making sound and holding an object near a vibrating tuning fork.]

1-PS4-2- Make observations to construct an evidence-based account that objects in darkness can be seen only when illuminated. [Clarification Statement: Examples of observations could include those made in a completely dark room, a pinhole box, and a video of a cave explorer with a flashlight. Illumination could be from an external light source or by an object giving off its own light.]

1-PS4-3- Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light. [Clarification Statement: Examples of materials could include those that are transparent (such as clear plastic), translucent (such as wax paper), opaque (such as cardboard), and reflective (such as a mirror).] [Assessment Boundary: Assessment does not include the speed of light.]

1-PS4-4- Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance. [Clarification Statement: Examples of devices could include a light source to send signals, paper cup and string "telephones," and a pattern of drum beats.] [Assessment Boundary: Assessment does not include technological details for how communication devices work.]

Performance Expectation

1-PS4-1- Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. [Clarification Statement: Examples of vibrating materials that make sound could include tuning forks and plucking a stretched string. Examples of how sound can make matter vibrate could include holding a piece of paper near a speaker making sound and holding an object near a vibrating tuning fork.]

Science and Engineering Practices	Disciplinary Core Ideas
Planning and Carrying Out Investigations <ul style="list-style-type: none"> • Plan and conduct investigations collaboratively to produce evidence to answer a question. 	PS4.A: Wave Properties- <ul style="list-style-type: none"> • Sound can make matter vibrate, and vibrating matter can make sound.

<p>Scientific Investigations Use a Variety of Methods</p> <ul style="list-style-type: none"> Science investigations begin with a question. Scientists use different ways to study the world. 	
<p align="center">Crosscutting Concepts</p>	<p align="center">Learning Objectives</p>
<p>Cause and Effect-</p> <ul style="list-style-type: none"> Simple tests can be designed to gather evidence to support or refute student ideas about causes. 	<ul style="list-style-type: none"> Students identify and describe the phenomenon and purpose of the investigation, which include providing evidence to answer questions about the relationship between vibrating materials and sound. Students collaboratively develop an investigation plan and describe* the evidence that will result from the investigation. According to the investigation plan they develop, students collaboratively collect and record observations about: Sounds causing materials to vibrate. Vibrating materials causing sounds.

<p align="center">Performance Expectation</p>	
<p>1-PS4-2- Make observations to construct an evidence-based account that objects in darkness can be seen only when illuminated. [Clarification Statement: Examples of observations could include those made in a completely dark room, a pinhole box, and a video of a cave explorer with a flashlight. Illumination could be from an external light source or by an object giving off its own light.]</p>	
<p align="center">Science and Engineering Practices</p>	<p align="center">Disciplinary Core Ideas</p>
<p>Constructing Explanations and Designing Solutions-</p> <ul style="list-style-type: none"> Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. 	<p>PS4.B: Electromagnetic Radiation-</p> <ul style="list-style-type: none"> Objects can be seen if light is available to illuminate them or if they give off their own light.
<p align="center">Crosscutting Concepts</p>	<p align="center">Learning Objectives</p>
<p>Cause and Effect-</p> <ul style="list-style-type: none"> Simple tests can be designed to 	<ul style="list-style-type: none"> Students articulate a statement that relates the given phenomenon to a scientific idea, including that when an object in the dark is lit (e.g., turning on a light in the dark space or from light the object itself gives

gather evidence to support or refute student ideas about causes.

- off), it can be seen.
- Students use evidence and reasoning to construct an evidence-based account of the phenomenon.
 - Students make observations (firsthand or from media) to serve as the basis for evidence.
 - Students logically connect the evidence to support the evidence-based account of the phenomenon.

Performance Expectation

1-PS4-3- Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light. [Clarification Statement: Examples of materials could include those that are transparent (such as clear plastic), translucent (such as wax paper), opaque (such as cardboard), and reflective (such as a mirror).] [Assessment Boundary: Assessment does not include the speed of light.]

Science and Engineering Practices	Disciplinary Core Ideas
<p>Planning and Carrying Out Investigations-</p> <ul style="list-style-type: none"> • Plan and conduct investigations collaboratively to produce evidence to answer a question. 	<p>PS4.B: Electromagnetic Radiation-</p> <ul style="list-style-type: none"> • Some materials allow light to pass through them, others allow only some light through and others block all the light and create a dark shadow on any surface beyond them, where the light cannot reach. Mirrors can be used to redirect a light beam. • (Boundary: The idea that light travels from place to place is developed through experiences with light sources, mirrors, and shadows, but no attempt is made to discuss the speed of light.)
Crosscutting Concepts	Learning Objectives
<p>Cause and Effect-</p> <ul style="list-style-type: none"> • Simple tests can be designed to gather evidence to support or refute student ideas about causes. 	<ul style="list-style-type: none"> • Students identify and describe the phenomenon and purpose of the investigation. • Students collaboratively develop an investigation plan and describe the data that will result from the investigation. • Students individually describe* how these observations provide evidence to answer the question under investigation. • Students collaboratively collect and record observations about what happens when objects made of materials that allow light to pass through them in different ways are placed in the path of a beam of light, according to the developed investigation plan.

Performance Expectation

1-PS4-4- Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.[Clarification Statement: Examples of devices could include a light source to send signals, paper cup and string “telephones,” and a pattern of drum beats.] [Assessment Boundary: Assessment does not include technological details for how communication

devices work.]

Science and Engineering Practices	Disciplinary Core Ideas
Crosscutting Concepts	Learning Objectives
Constructing Explanations and Designing Solutions- <ul style="list-style-type: none">• Use tools and materials provided to design a device that solves a specific problem.	PS4.C: Information Technologies and Instrumentation- <ul style="list-style-type: none">• People also use a variety of devices to communicate (send and receive information) over long distances.
Influence of Engineering, Technology, and Science, on Society and the Natural World <ul style="list-style-type: none">• People depend on various technologies in their lives; human life would be very different without technology.	<ul style="list-style-type: none">• Students describe a given problem involving people communicating over long distances.• With guidance, students design and build a device that uses light or sound to solve the given problem.• With guidance, students describe* the scientific information they use to design the solution.• Students describe that specific expected or required features of the design solution are included.• Students describe how communicating over long distances helps people.

Primary Interdisciplinary Connections:

- ELA: SL.1.3. Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.
- Engineering Units are embedding throughout

Technology Standards:

- 8.1.2.A.1 Identify the basic features of a digital device and explain its purpose.
- 8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
- 8.2.2.C.1 Brainstorm ideas on how to solve a problem or build a product
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Suggested Accommodations

English Language Learners:

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- Using tactile objects to relate to key ideas.

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- Provide increased knowledge base and vocabulary use about real world experiences.
- Share the decision making in class.
- Maintain expectations while offering choice and soliciting input (e.g., "Would you rather do your rough draft now or gather some more ideas first?").
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- Build supportive relationships, provide positive guidance, foster hope and optimism, and take time for affirmation and celebration.
- Provide access to computers, magazines, newspapers, and books so low-income students can see and work with printed materials
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Culturally Diverse:

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- Assign peer tutor
- Allow students to demonstrate knowledge through alternative assessments Asian, Native Hawaiian/ Other Pacific Islanders
- Greater accommodation of English language learner students on assessment tests and in the classroom,
- Allocation of more resources to involve parents who are non-native English speakers
- Familiarize themselves with the values, traditions, and customs of various cultures; and learn the migratory conditions specific to each of their students' families.
- Learn at least a few words of their Asian students' native languages. By showing such interest, teachers can set the tone for better communication.
- Collaborate with language professionals and ESL teachers
- Encourage parents to help children maintain their native language at home, while the school helps the child attain proficiency in English.
- Teachers have a clear sense of their own ethnic and cultural identities.
- Teachers communicate high expectations for the success of all students and a belief that all students can succeed.

- Teachers provide a "scaffolding" that links the academically challenging curriculum to the cultural resources that students bring to school.
- Teachers explicitly teach students the culture of the school and seek to maintain students' sense of ethnocultural pride and identity
- Maintain high standards and demonstrate high expectations for all ethnically, culturally, and linguistically diverse students.

Evidence of Student Learning

Formative Tasks:

- Cooperative group learning
- Exit slips
- Analysis of student work
- Teacher observations
- Self-reflection
- Science journals

Alternative Assessments:

- Performance Tasks
- Student created models
- Written/verbal explanations
- Peer assessment
- Self-assessment
- Critical Juncture Assessments

Summative Assessments:

- Associated unit tests, quizzes
- Labs and engineering based projects
- Student created models
- Written student explanations of phenomenon

Benchmark Assessments:

- Pre-Unit Assessments
- On-the-fly Assessments

Knowledge & Skills

Enduring Understandings:

- Light makes things look bright.
- You need some light to see.
- All light comes from a source.
- When light from a source gets to a surface, the surface looks bright.
- When light is blocked by an object, the surface behind the object looks dark, and we call this a shadow.
- When light is blocked by a material, the surface behind the material looks dark, and we call this a shadow.
- When all light passes through a material, the surface behind the material looks bright.
- When some light passes through a material, the surface behind the material looks medium bright.
- All sound comes from a source.
- A source makes a sound because part of it is vibrating.

Essential Questions:

- What makes something look bright or dark?
- Where does the light come from that makes surfaces look bright or dark?
- What makes a surface look bright or dark?
- How do we stop light from getting to one part of a surface?
- How do materials make areas on a surface that are not dark?
- What happens when something starts making a sound?
- How do we make different vibrations to make different kinds of sounds for our puppet show scenes?

Core Instructional & Supplemental Materials

Suggested Activities/Resources:

- [BrainPOP](#)
- <https://www.brainpop.com/science/>
- [New Jersey Center for Teaching & Learning](#)

Varied Levels of Text:

- *Engineering with Light and Sound*
- *Can You See in the Dark?*
- *What Made this Shadow?*

<ul style="list-style-type: none"> ● Khan Academy ● National Science Teachers Association ● Better Lessons- Science ● Next Generation Science Instructional Resources ● National Geographic Learning ● Draw pictures of things that make light or sound. ● Take a listening walk in and around the building. ● Use flashlights to reflect light off of mirrors. ● HMH Science dimensions 	<ul style="list-style-type: none"> ● <i>Let's Test!</i> ● <i>What Vibrates?</i>
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Unit 3: Light	Duration: 30 days- ongoing
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Standards/Learning Targets

1-PS4-1- Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. [Clarification Statement: Examples of vibrating materials that make sound could include tuning forks and plucking a stretched string. Examples of how sound can make matter vibrate could include holding a piece of paper near a speaker making sound and holding an object near a vibrating tuning fork.]

1-PS4-2- Make observations to construct an evidence-based account that objects in darkness can be seen only when illuminated. [Clarification Statement: Examples of observations could include those made in a completely dark room, a pinhole box, and a video of a cave explorer with a flashlight. Illumination could be from an external light source or by an object giving off its own light.]

1-PS4-3- Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light. [Clarification Statement: Examples of materials could include those that are transparent (such as clear plastic), translucent (such as wax paper), opaque (such as cardboard), and reflective (such as a mirror).] [Assessment Boundary: Assessment does not include the speed of light.]

1-PS4-4- Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.[Clarification Statement: Examples of devices could include a light source to send signals, paper cup and string “telephones,” and a pattern of drum beats.] [Assessment Boundary: Assessment does not include technological details for how communication devices work.]

Performance Expectation

1-PS4-1- Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. [Clarification Statement: Examples of vibrating materials that make sound could include tuning forks and plucking a stretched string. Examples of how sound can make matter vibrate could include holding a piece of paper near a speaker making sound and holding an object near a vibrating tuning fork.]

Science and Engineering Practices	Disciplinary Core Ideas
<p>Planning and Carrying Out Investigations</p> <ul style="list-style-type: none"> ● Plan and conduct investigations collaboratively to produce evidence to answer a question. <p>Scientific Investigations Use a Variety of Methods</p>	<p>PS4.A: Wave Properties-</p> <ul style="list-style-type: none"> ● Sound can make matter vibrate, and vibrating matter can make sound.

<ul style="list-style-type: none"> Science investigations begin with a question. Scientists use different ways to study the world. 	
Crosscutting Concepts	Learning Objectives
<p>Cause and Effect-</p> <ul style="list-style-type: none"> Simple tests can be designed to gather evidence to support or refute student ideas about causes. 	<ul style="list-style-type: none"> Students identify and describe the phenomenon and purpose of the investigation, which include providing evidence to answer questions about the relationship between vibrating materials and sound. Students collaboratively develop an investigation plan and describe* the evidence that will result from the investigation. According to the investigation plan they develop, students collaboratively collect and record observations about: Sounds causing materials to vibrate. Vibrating materials causing sounds.
Performance Expectation	
<p>1-PS4-2- Make observations to construct an evidence-based account that objects in darkness can be seen only when illuminated. [Clarification Statement: Examples of observations could include those made in a completely dark room, a pinhole box, and a video of a cave explorer with a flashlight. Illumination could be from an external light source or by an object giving off its own light.]</p>	
Science and Engineering Practices	Disciplinary Core Ideas
<p>Constructing Explanations and Designing Solutions-</p> <ul style="list-style-type: none"> Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. 	<p>PS4.B: Electromagnetic Radiation-</p> <ul style="list-style-type: none"> Objects can be seen if light is available to illuminate them or if they give off their own light.
Crosscutting Concepts	Learning Objectives
<p>Cause and Effect-</p> <ul style="list-style-type: none"> Simple tests can be designed to gather evidence 	<ul style="list-style-type: none"> Students articulate a statement that relates the given phenomenon to a scientific idea, including that when an object in the dark is lit (e.g., turning on a light in the dark space or from light the object itself gives off), it can be seen.

to support or refute student ideas about causes.

- Students use evidence and reasoning to construct an evidence-based account of the phenomenon.
- Students make observations (firsthand or from media) to serve as the basis for evidence.
- Students logically connect the evidence to support the evidence-based account of the phenomenon.

Performance Expectation

1-PS4-3- Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light. [Clarification Statement: Examples of materials could include those that are transparent (such as clear plastic), translucent (such as wax paper), opaque (such as cardboard), and reflective (such as a mirror).] [Assessment Boundary: Assessment does not include the speed of light.]

Science and Engineering Practices

Disciplinary Core Ideas

Planning and Carrying Out Investigations-

- Plan and conduct investigations collaboratively to produce evidence to answer a question.

PS4.B: Electromagnetic Radiation-

- Some materials allow light to pass through them, others allow only some light through and others block all the light and create a dark shadow on any surface beyond them, where the light cannot reach. Mirrors can be used to redirect a light beam.
- (Boundary: The idea that light travels from place to place is developed through experiences with light sources, mirrors, and shadows, but no attempt is made to discuss the speed of light.)

Crosscutting Concepts

Learning Objectives

Cause and Effect-

- Simple tests can be designed to gather evidence to support or refute student ideas about causes.

- Students identify and describe the phenomenon and purpose of the investigation.
- Students collaboratively develop an investigation plan and describe the data that will result from the investigation.
- Students individually describe* how these observations provide evidence to answer the question under investigation.
- Students collaboratively collect and record observations about what happens when objects made of materials that allow light to pass through them in different ways are placed in the path of a beam of light, according to the developed investigation plan.

Performance Expectation

1-PS4-4- Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.[Clarification Statement: Examples of devices could include a light source to send signals, paper cup and string “telephones,” and a pattern of drum beats.] [Assessment Boundary: Assessment does not include technological details for how communication devices work.]

Science and Engineering Practices	Disciplinary Core Ideas
Constructing Explanations and Designing Solutions- <ul style="list-style-type: none"> Use tools and materials provided to design a device that solves a specific problem. 	PS4.C: Information Technologies and Instrumentation- <ul style="list-style-type: none"> People also use a variety of devices to communicate (send and receive information) over long distances.
Crosscutting Concepts	Learning Objectives
Influence of Engineering, Technology, and Science, on Society and the Natural World <ul style="list-style-type: none"> People depend on various technologies in their lives; human life would be very different without technology. 	<ul style="list-style-type: none"> Students describe a given problem involving people communicating over long distances. With guidance, students design and build a device that uses light or sound to solve the given problem. With guidance, students describe* the scientific information they use to design the solution. Students describe that specific expected or required features of the design solution are included. Students describe how communicating over long distances helps people.

Primary Interdisciplinary Connections:

- ELA: SL.1.3. Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.
- Engineering Units are embedding throughout

Technology Standards:

- 8.1.2.A.1 Identify the basic features of a digital device and explain its purpose.
- 8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
- 8.2.2.C.1 Brainstorm ideas on how to solve a problem or build a product
- 8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.
- 8.2.2.E.1 List and demonstrate the steps to an everyday task

Career Ready Practices:

- CRP1. Act as a responsible and contributing citizen and employee.
- CRP4. Communicate clearly and effectively and with reason.
- CRP12. Work productively in teams while using cultural global competence.

21st Century Life and Career Standards:

- 9.1.4.A.1- Explain the difference between a career and a job, and identify various jobs in the community and the related earnings.

Suggested Accommodations

English Language Learners:

- Labeled pictures of academic skill
- Using tactile objects to relate to key ideas.
- Chunk/limit information
- Speak slowly

- Limit number of questions
- Partner with a strong English speaking partner
- Extended time
- Modified assignments

Special Education//Students with Disabilities:

- Follow specific IEP accommodations and modifications
- Extended time
- Modified assignments
- Labeled pictures of weather phenomenon
- Pre-teach concepts
- Differentiate assignments
- Allow alternate assignments and assessment

504:

- Follow specific 504 accommodations and modifications
- Extended time
- Modified assignments
- Labeled pictures of weather phenomenon
- Pre-teach concepts
- Differentiate assignments
- Allow alternate assignments and assessment

Gifted and Talented:

- Differentiate assignments
- Higher level texts
- Complete different homework problems than peers
- Differentiate test questions
- Create alternate projects or assignments that challenge thinking
- Reference and possibly apply assessment boundary skills

Students at Risk of Failure:

- Small group instruction
- Frequent breaks
- Model how assignments should look
- Incorporate social/emotional discussions
- Encourage and monitor positive peer collaboration
- Provide academic resources for both home and school use
- Provide incentives to increase motivation and collaboration

Economically Disadvantaged:

- Provide clear, achievable expectations, do not lower academic requirements for them.
- Build a safe and nurturing atmosphere
- Perspective and experiences of the children need to be considered
- Create ways for students to share their emotions
- Give every student the same opportunity for success.
- Offer tutoring. Thirty or forty minutes a few times a week can dramatically increase a disadvantaged child's achievement level
- Assemble a packet with information and expectations for each class.
- Be flexible with assignments
- Allow students to finish assignments independently, or give them the opportunity to complete tasks at their own pace.
- Talk with parents about class expectations and the challenges of changing schools mid-year.
- Use real-world examples and create mental models for abstract idea

- Provide increased knowledge base and vocabulary use about real world experiences.
- Share the decision making in class.
- Maintain expectations while offering choice and soliciting input (e.g., "Would you rather do your rough draft now or gather some more ideas first?").
- Model the process of adult thinking.
- Discipline through positive relationships, not by exerting power or authority.
- Use a variety of classroom strategies that strengthen social and emotional skills
- Create a familial atmosphere by using inclusive and affiliative language
- Build supportive relationships, provide positive guidance, foster hope and optimism, and take time for affirmation and celebration.
- Provide access to computers, magazines, newspapers, and books so low-income students can see and work with printed materials
- Daily affirmations
- Asking to hear students' hopes and offering reinforcements of those hopes
- Telling students why they can succeed
- Providing needed academic resources (paper, pencils, computer time)
- Helping students to set goals and build goal-setting skills

Culturally Diverse:

- Involve families in student learning
- Consult with tribes and tribal education departments
- Provide social/emotional support
- Respect cultural traditions
- Build in more group work to encourage interaction with peers
- Show photos, videos, and definitions when possible for culturally unique vocabulary
- Help students feel more comfortable by learning about their cultural background
- Provide immediate praise and feedback
- Provide high interest topics/options
- Provide road maps or outlines for difficult concepts
- Provide sufficient wait time before calling on any student to help keep students who may need more time engaged
- Create a nurturing environment with structured routines
- Teach study skills
- Provided students with necessary academic resources and materials
- Allow for alternative assignments
- Provide visuals
- Assign peer tutor
- Allow students to demonstrate knowledge through alternative assessments Asian, Native Hawaiian/ Other Pacific Islanders
- Greater accommodation of English language learner students on assessment tests and in the classroom,
- Allocation of more resources to involve parents who are non-native English speakers
- Familiarize themselves with the values, traditions, and customs of various cultures; and learn the migratory conditions specific to each of their students' families.
- Learn at least a few words of their Asian students' native languages. By showing such interest, teachers can set the tone for better communication.
- Collaborate with language professionals and ESL teachers
- Encourage parents to help children maintain their native language at home, while the school helps the child attain proficiency in English.
- Teachers have a clear sense of their own ethnic and cultural identities.
- Teachers communicate high expectations for the success of all students and a belief that all students can succeed.
- Teachers provide a "scaffolding" that links the academically challenging curriculum to the cultural resources that students bring to school.

- Teachers explicitly teach students the culture of the school and seek to maintain students' sense of ethnocultural pride and identity
- Maintain high standards and demonstrate high expectations for all ethnically, culturally, and linguistically diverse students.

Evidence of Student Learning

Formative Tasks:

- Cooperative group learning
- Exit slips
- Analysis of student work
- Teacher observations
- Self-reflection
- Science journals

Alternative Assessments:

- Performance Tasks
- Student created models
- Written/verbal explanations
- Peer assessment
- Self-assessment
- Critical Juncture Assessments

Summative Assessments:

- Associated unit tests, quizzes
- Labs and engineering based projects
- Student created models
- Written student explanations of phenomenon

Benchmark Assessments:

- Pre-Unit Assessments
- On-the-fly Assessments

Knowledge & Skills

Enduring Understandings:

- Light makes things look bright.
- You need some light to see.
- All light comes from a source.
- When light from a source gets to a surface, the surface looks bright.
- When light is blocked by an object, the surface behind the object looks dark, and we call this a shadow.
- When light is blocked by a material, the surface behind the material looks dark, and we call this a shadow.
- When all light passes through a material, the surface behind the material looks bright.
- When some light passes through a material, the surface behind the material looks medium bright.
- All sound comes from a source.
- A source makes a sound because part of it is vibrating.

Essential Questions:

- What makes something look bright or dark?
- Where does the light come from that makes surfaces look bright or dark?
- What makes a surface look bright or dark?
- How do we stop light from getting to one part of a surface?
- How do materials make areas on a surface that are not dark?
- What happens when something starts making a sound?
- How do we make different vibrations to make different kinds of sounds for our puppet show scenes?

Core Instructional & Supplemental Materials

Suggested Activities/Resources:

- [BrainPOP](#)
- <https://www.brainpop.com/science/>
- [New Jersey Center for Teaching & Learning](#)
- [Khan Academy](#)

Varied Levels of Text:

- *Engineering with Light and Sound*
- *Can You See in the Dark?*
- *What Made this Shadow?*
- *Let's Test!*

<ul style="list-style-type: none"> • National Science Teachers Association • Better Lessons- Science • Next Generation Science Instructional Resources • National Geographic Learning • Draw pictures of things that make light or sound. • Take a listening walk in and around the building. • Use flashlights to reflect light off of mirrors. • HMH Science dimensions 	<ul style="list-style-type: none"> • <i>What Vibrates?</i>
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Unit 4: Plant and Animal Structures	Duration: 30 days- ongoing
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Standards/Learning Targets

New Jersey Student Learning Standards:

- **1-LS1-1-** Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.* [Clarification Statement: Examples of human problems that can be solved by mimicking plant or animal solutions could include designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorn shells, and animal scales; stabilizing structures by mimicking animal tails and roots on plants; keeping out intruders by mimicking thorns on branches and animal quills; and, detecting intruders by mimicking eyes and ears.]
- **1-LS1-2-** Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.[Clarification Statement: Examples of patterns of behaviors could include the signals that offspring make (such as crying, cheeping, and other vocalizations) and the responses of the parents (such as feeding, comforting, and protecting the offspring).]
- **1-LS3-1-** Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents. [Clarification Statement: Examples of patterns could include features plants or animals share. Examples of observations could include leaves from the same kind of plant are the same shape but can differ in size; and, a particular breed of dog looks like its parents but is not exactly the same.] [Assessment Boundary: Assessment does not include inheritance or animals that undergo metamorphosis or hybrids.]

Performance Expectation

1-LS1-1- Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.* [Clarification Statement: Examples of human problems that can be solved by mimicking plant or animal solutions could include designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorn shells, and animal scales; stabilizing structures by mimicking animal tails and roots on plants; keeping out intruders by mimicking thorns on branches and animal quills; and, detecting intruders by mimicking eyes and ears.]

Science and Engineering Practices	Disciplinary Core Ideas
<p>Constructing Explanations and Designing Solutions</p> <ul style="list-style-type: none"> • Use materials to design a device that solves a specific problem or a solution to a specific problem. 	<p>LS1.A: Structure and Function</p> <ul style="list-style-type: none"> • All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and

	<p>seek, find, and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.</p> <p>LS1.D: Information Processing</p> <ul style="list-style-type: none"> Animals have body parts that capture and convey different kinds of information needed for growth and survival. Animals respond to these inputs with behaviors that help them survive. Plants also respond to some external inputs.
Crosscutting Concepts	Learning Objectives
<p>Structure and Function</p> <ul style="list-style-type: none"> The shape and stability of structures of natural and designed objects are related to their function(s). <p>Influence of Science, Engineering and Technology on Society and the Natural World</p> <ul style="list-style-type: none"> Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world. 	<ul style="list-style-type: none"> Students describe the given human problem to be solved by the design. With guidance, students use given scientific information about plants and/or animals to design the solution. Students design a device (using student-suggested materials) that provides a solution to the given human problem by mimicking how plants and/or animals use external structures to survive, grow, and/or meet their needs. Students describe the specific expected or required features in their designs and devices.
Performance Expectation	
<p>1-LS1-2- Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive. [Clarification Statement: Examples of patterns of behaviors could include the signals that offspring make (such as crying, cheeping, and other vocalizations) and the responses of the parents (such as feeding, comforting, and protecting the offspring).]</p>	
Science and Engineering Practices	Disciplinary Core Ideas
<p>Obtaining, Evaluating, and Communicating Information-</p> <ul style="list-style-type: none"> Read grade-appropriate texts and use media to obtain scientific information to determine patterns in the natural world. 	<p>LS1.B-</p> <ul style="list-style-type: none"> Growth and Development of Organisms Adult plants and animals can have young. In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring to survive.

<p>Scientific Knowledge is Based on Empirical Evidence</p> <ul style="list-style-type: none"> • Scientists look for patterns and order when making observations about the world. 	
<p>Crosscutting Concepts</p>	<p>Learning Objectives</p>
<p>Patterns-</p> <ul style="list-style-type: none"> • Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence. 	<ul style="list-style-type: none"> • Students use grade-appropriate books and other reliable media to obtain scientific information. • Students evaluate the information to determine and describe the patterns of what animal parents and offspring do to help offspring survive (e.g., when a baby cries, the mother feeds it; when danger is present, parents protect offspring; some young animals become silent to avoid predators).

Performance Expectation

1-LS3-1- Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents. [Clarification Statement: Examples of patterns could include features plants or animals share. Examples of observations could include leaves from the same kind of plant are the same shape but can differ in size; and, a particular breed of dog looks like its parents but is not exactly the same.] [Assessment Boundary: Assessment does not include inheritance or animals that undergo metamorphosis or hybrids.]

<p>Science and Engineering Practices</p>	<p>Disciplinary Core Ideas</p>
<p>Constructing Explanations and Designing Solutions</p> <ul style="list-style-type: none"> • Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. 	<p>LS3.A: Inheritance of Traits</p> <ul style="list-style-type: none"> • Young animals are very much, but not exactly like, their parents. Plants also are very much, but not exactly, like their parents. <p>LS3.B: Variation of Traits</p> <ul style="list-style-type: none"> • Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways.
<p>Crosscutting Concepts</p>	<p>Learning Objectives</p>

Patterns-

- Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.
- Students articulate a statement that relates a given phenomenon to a scientific idea, including the idea that young plants and animals are like, but not exactly like, their parents (not to include animals that undergo complete metamorphosis, such as insects or frogs).
- Students use evidence and reasoning to construct an evidence-based account of the phenomenon.
- Students describe* evidence from observations (firsthand or from media) about patterns of features in plants and animals
- Students logically connect the evidence of observed patterns in features to support the evidence-based account by describing* chains of reasoning.

Primary Interdisciplinary Connections:

- ELA: SL.1.3. Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.
- Engineering Units are embedding throughout

Technology Standards:

- 8.1.2.A.1 Identify the basic features of a digital device and explain its purpose.
- 8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
- 8.2.2.C.1 Brainstorm ideas on how to solve a problem or build a product
- 8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.
- 8.2.2.E.1 List and demonstrate the steps to an everyday task

Career Ready Practices:

- CRP1. Act as a responsible and contributing citizen and employee.
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21st Century Life and Career Standards:

- 9.1.4.A.1- Explain the difference between a career and a job, and identify various jobs in the community and the related earnings.

Suggested Accommodations**English Language Learners:**

- Labeled pictures of academic skill
- Using tactile objects to relate to key ideas.
- Chunk/limit information
- Speak slowly
- Limit number of questions
- Partner with a strong English speaking partner
- Extended time
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- Perspective and experiences of the children need to be considered
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- Talk with parents about class expectations and the challenges of changing schools mid-year.
- Use real-world examples and create mental models for abstract idea
- Provide increased knowledge base and vocabulary use about real world experiences.
- Share the decision making in class.
- Maintain expectations while offering choice and soliciting input (e.g., "Would you rather do your rough draft now or gather some more ideas first?").
- Model the process of adult thinking.
- Discipline through positive relationships, not by exerting power or authority.
- Use a variety of classroom strategies that strengthen social and emotional skills
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- Provide access to computers, magazines, newspapers, and books so low-income students can see and work with printed materials
- Daily affirmations
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- Telling students why they can succeed
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Culturally Diverse:

- Involve families in student learning
- Consult with tribes and tribal education departments
- Provide social/emotional support
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- Provided students with necessary academic resources and materials
- Allow for alternative assignments
- Provide visuals
- Assign peer tutor
- Allow students to demonstrate knowledge through alternative assessments Asian, Native Hawaiian/ Other Pacific Islanders
- Greater accommodation of English language learner students on assessment tests and in the classroom,
- Allocation of more resources to involve parents who are non-native English speakers
- Familiarize themselves with the values, traditions, and customs of various cultures; and learn the migratory conditions specific to each of their students' families.
- Learn at least a few words of their Asian students' native languages. By showing such interest, teachers can set the tone for better communication.
- Collaborate with language professionals and ESL teachers
- Encourage parents to help children maintain their native language at home, while the school helps the child attain proficiency in English.
- Teachers have a clear sense of their own ethnic and cultural identities.
- Teachers communicate high expectations for the success of all students and a belief that all students can succeed.
- Teachers provide a "scaffolding" that links the academically challenging curriculum to the cultural resources that students bring to school.
- Teachers explicitly teach students the culture of the school and seek to maintain students' sense of ethnocultural pride and identity
- Maintain high standards and demonstrate high expectations for all ethnically, culturally, and linguistically diverse students.

Evidence of Student Learning

Formative Tasks:

- Cooperative group learning

Alternative Assessments:

- Performance Tasks

<ul style="list-style-type: none"> ● Exit slips ● Analysis of student work ● Teacher observations ● Self-reflection ● Science journals 	<ul style="list-style-type: none"> ● Student created models ● Written/verbal explanations ● Peer assessment ● Self-assessment ● Critical Juncture Assessments
<p>Summative Assessments:</p> <ul style="list-style-type: none"> ● Associated unit tests, quizzes ● Labs and engineering based projects ● Student created models ● Written student explanations of phenomenon 	<p>Benchmark Assessments:</p> <ul style="list-style-type: none"> ● Pre-Unit Assessments ● On-the-fly Assessments
<p>Knowledge & Skills</p>	
<p>Enduring Understandings:</p> <ul style="list-style-type: none"> ● To survive, animals and plants need to get water, air, and food. ● Animals and plants have structures that help them do what they need to do to survive. ● To survive, animals and plants need to get water, air, and food, and to not be eaten. ● Many animals use their sharp structures to make animals and plants easier to eat. ● Animals and plants have defenses, structures that keep other animals from eating them. ● Scientists can make things that copy animal or plant structures to solve human problems. ● When plant and animal offspring grow up, they defend themselves in the same way as their parents. (3.3) ● Some kinds of young offspring get help from their parents and other kinds of young offspring survive on their own. 	<p>Essential Questions:</p> <ul style="list-style-type: none"> ● What do animals and plants need to do to survive? ● How do animals and plants do what they need to do to survive? ● How do animals eat other living things? ● How do animals and plants defend themselves? ● How can we use ideas about animal and plant defenses to solve a problem? ● How do animal and plant offspring defend themselves when they grow up? ● How do animal and plant offspring defend themselves when they are young? ● How do scientists make and use models to explain their ideas?
<p>Core Instructional & Supplemental Materials</p>	
<p>Suggested Activities/Resources:</p> <ul style="list-style-type: none"> ● HMH Science dimensions ● BrainPOP ● https://www.brainpop.com/science/ ● New Jersey Center for Teaching & Learning ● Khan Academy ● National Science Teachers Association ● Better Lessons- Science ● Next Generation Science Instructional Resources ● National Geographic Learning 	<p>Varied Levels of Text:</p> <ul style="list-style-type: none"> ● <i>Tortoise Parts</i> ● <i>Whose Lunch is This?</i> ● <i>Parents and Offspring</i> ● <i>Frog Models</i> ● <i>Spikes, Spines, and Shells: A Handbook of Defenses</i>
<p>Unit 5: Living Things and Their Young</p>	<p>Duration: 30 days- ongoing</p>
<p>Standards/Learning Targets</p>	

New Jersey Student Learning Standards:

- **1-LS1-1-** Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.* [Clarification Statement: Examples of human problems that can be solved by mimicking plant or animal solutions could include designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorn shells, and animal scales; stabilizing structures by mimicking animal tails and roots on plants; keeping out intruders by mimicking thorns on branches and animal quills; and, detecting intruders by mimicking eyes and ears.]
- **1-LS1-2-** Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.[Clarification Statement: Examples of patterns of behaviors could include the signals that offspring make (such as crying, cheeping, and other vocalizations) and the responses of the parents (such as feeding, comforting, and protecting the offspring).]
- **1-LS3-1-** Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents. [Clarification Statement: Examples of patterns could include features plants or animals share. Examples of observations could include leaves from the same kind of plant are the same shape but can differ in size; and, a particular breed of dog looks like its parents but is not exactly the same.] [Assessment Boundary: Assessment does not include inheritance or animals that undergo metamorphosis or hybrids.]

Performance Expectation

1-LS1-1- Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.* [Clarification Statement: Examples of human problems that can be solved by mimicking plant or animal solutions could include designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorn shells, and animal scales; stabilizing structures by mimicking animal tails and roots on plants; keeping out intruders by mimicking thorns on branches and animal quills; and, detecting intruders by mimicking eyes and ears.]

Science and Engineering Practices

Constructing Explanations and Designing Solutions

- Use materials to design a device that solves a specific problem or a solution to a specific problem.

Disciplinary Core Ideas

LS1.A: Structure and Function

- All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow.

LS1.D: Information Processing

- Animals have body parts that capture and convey different kinds of information needed for growth and survival. Animals respond to these inputs with behaviors that help them survive. Plants also respond to some external inputs.

Crosscutting Concepts

Structure and Function

- The shape and stability of structures of natural and designed objects are related to their function(s).

Learning Objectives

- Students describe the given human problem to be solved by the design.
- With guidance, students use given scientific information about plants and/or animals to

Influence of Science, Engineering and Technology on Society and the Natural World

- Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world.

design the solution.

- Students design a device (using student-suggested materials) that provides a solution to the given human problem by mimicking how plants and/or animals use external structures to survive, grow, and/or meet their needs.
- Students describe the specific expected or required features in their designs and devices.

Performance Expectation

1-LS1-2- Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive. [Clarification Statement: Examples of patterns of behaviors could include the signals that offspring make (such as crying, cheeping, and other vocalizations) and the responses of the parents (such as feeding, comforting, and protecting the offspring).]

Science and Engineering Practices

Disciplinary Core Ideas

Obtaining, Evaluating, and Communicating Information-

- Read grade-appropriate texts and use media to obtain scientific information to determine patterns in the natural world.

Scientific Knowledge is Based on Empirical Evidence

- Scientists look for patterns and order when making observations about the world.

LS1.B-

- Growth and Development of Organisms Adult plants and animals can have young. In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring to survive.

Crosscutting Concepts

Learning Objectives

Patterns-

- Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.

- Students use grade-appropriate books and other reliable media to obtain scientific information.
- Students evaluate the information to determine and describe the patterns of what animal parents and offspring do to help offspring survive (e.g., when a baby cries, the mother feeds it; when danger is present, parents protect offspring; some young animals become silent to avoid predators).

Performance Expectation

1-LS3-1- Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents. [Clarification Statement: Examples of patterns could include features plants or animals share. Examples of observations could include leaves from the same kind of plant are the same shape but can differ in size; and, a particular breed of dog looks like its parents but is

not exactly the same.] [Assessment Boundary: Assessment does not include inheritance or animals that undergo metamorphosis or hybrids.]

Science and Engineering Practices	Disciplinary Core Ideas
<p>Constructing Explanations and Designing Solutions</p> <ul style="list-style-type: none"> • Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. 	<p>LS3.A: Inheritance of Traits</p> <ul style="list-style-type: none"> • Young animals are very much, but not exactly like, their parents. Plants also are very much, but not exactly, like their parents. <p>LS3.B: Variation of Traits</p> <ul style="list-style-type: none"> • Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways.
Crosscutting Concepts	Learning Objectives
<p>Patterns-</p> <ul style="list-style-type: none"> • Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence. 	<ul style="list-style-type: none"> • Students articulate a statement that relates a given phenomenon to a scientific idea, including the idea that young plants and animals are like, but not exactly like, their parents (not to include animals that undergo complete metamorphosis, such as insects or frogs). • Students use evidence and reasoning to construct an evidence-based account of the phenomenon. • Students describe* evidence from observations (firsthand or from media) about patterns of features in plants and animals • Students logically connect the evidence of observed patterns in features to support the evidence-based account by describing* chains of reasoning.

Primary Interdisciplinary Connections:

- **ELA/Literacy-**
 - ELA: SL.1.3. Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.
 - Engineering Units are embedding throughout

Technology Standards:

- 8.1.2.A.1 Identify the basic features of a digital device and explain its purpose.
- 8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
- 8.2.2.C.1 Brainstorm ideas on how to solve a problem or build a product
- 8.1.2.E.1 Use digital tools and online resources to explore a problem or issue.
- 8.2.2.E.1 List and demonstrate the steps to an everyday task

Career Ready Practices:

- CRP1. Act as a responsible and contributing citizen and employee.
- CRP4. Communicate clearly and effectively and with reason.
- CRP12. Work productively in teams while using cultural global competence.

21st Century Life and Career Standards:

- 9.1.4.A.1- Explain the difference between a career and a job, and identify various jobs in the community and the related earnings.

Suggested Accommodations**English Language Learners:**

- Labeled pictures of academic skill
- Using tactile objects to relate to key ideas.
- Chunk/limit information
- Speak slowly
- Limit number of questions
- Partner with a strong English speaking partner
- Extended time
- Modified assignments

Special Education//Students with Disabilities:

- Follow specific IEP accommodations and modifications
- Extended time
- Modified assignments
- Labeled pictures of weather phenomenon
- Pre-teach concepts
- Differentiate assignments
- Allow alternate assignments and assessment

504:

- Follow specific 504 accommodations and modifications
- Extended time
- Modified assignments
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Gifted and Talented:

- Differentiate assignments
- Higher level texts
- Complete different homework problems than peers
- Differentiate test questions
- Create alternate projects or assignments that challenge thinking
- Reference and possibly apply assessment boundary skills

Students at Risk of Failure:

- Small group instruction
- Frequent breaks
- Model how assignments should look
- Incorporate social/emotional discussions
- Encourage and monitor positive peer collaboration
- Provide academic resources for both home and school use
- Provide incentives to increase motivation and collaboration

Economically Disadvantaged:

- Provide clear, achievable expectations, do not lower academic requirements for them.

- Build a safe and nurturing atmosphere
- Perspective and experiences of the children need to be considered
- Create ways for students to share their emotions
- Give every student the same opportunity for success.
- Offer tutoring. Thirty or forty minutes a few times a week can dramatically increase a disadvantaged child's achievement level
- Assemble a packet with information and expectations for each class.
- Be flexible with assignments
- Allow students to finish assignments independently, or give them the opportunity to complete tasks at their own pace.
- Talk with parents about class expectations and the challenges of changing schools mid-year.
- Use real-world examples and create mental models for abstract idea
- Provide increased knowledge base and vocabulary use about real world experiences.
- Share the decision making in class.
- Maintain expectations while offering choice and soliciting input (e.g., "Would you rather do your rough draft now or gather some more ideas first?").
- Model the process of adult thinking.
- Discipline through positive relationships, not by exerting power or authority.
- Use a variety of classroom strategies that strengthen social and emotional skills
- Create a familial atmosphere by using inclusive and affiliative language
- Build supportive relationships, provide positive guidance, foster hope and optimism, and take time for affirmation and celebration.
- Provide access to computers, magazines, newspapers, and books so low-income students can see and work with printed materials
- Daily affirmations
- Asking to hear students' hopes and offering reinforcements of those hopes
- Telling students why they can succeed
- Providing needed academic resources (paper, pencils, computer time)
- Helping students to set goals and build goal-setting skills

Culturally Diverse:

- Involve families in student learning
- Consult with tribes and tribal education departments
- Provide social/emotional support
- Respect cultural traditions
- Build in more group work to encourage interaction with peers
- Show photos, videos, and definitions when possible for culturally unique vocabulary
- Help students feel more comfortable by learning about their cultural background
- Provide immediate praise and feedback
- Provide high interest topics/options
- Provide road maps or outlines for difficult concepts
- Provide sufficient wait time before calling on any student to help keep students who may need more time engaged
- Create a nurturing environment with structured routines
- Teach study skills
- Provided students with necessary academic resources and materials
- Allow for alternative assignments
- Provide visuals
- Assign peer tutor
- Allow students to demonstrate knowledge through alternative assessments Asian, Native Hawaiian/ Other Pacific Islanders
- Greater accommodation of English language learner students on assessment tests and in the classroom,
- Allocation of more resources to involve parents who are non-native English speakers

- Familiarize themselves with the values, traditions, and customs of various cultures; and learn the migratory conditions specific to each of their students' families.
- Learn at least a few words of their Asian students' native languages. By showing such interest, teachers can set the tone for better communication.
- Collaborate with language professionals and ESL teachers
- Encourage parents to help children maintain their native language at home, while the school helps the child attain proficiency in English.
- Teachers have a clear sense of their own ethnic and cultural identities.
- Teachers communicate high expectations for the success of all students and a belief that all students can succeed.
- Teachers provide a "scaffolding" that links the academically challenging curriculum to the cultural resources that students bring to school.
- Teachers explicitly teach students the culture of the school and seek to maintain students' sense of ethnocultural pride and identity
- Maintain high standards and demonstrate high expectations for all ethnically, culturally, and linguistically diverse students.

Evidence of Student Learning

Formative Tasks:

- Cooperative group learning
- Exit slips
- Analysis of student work
- Teacher observations
- Self-reflection
- Science journals

Alternative Assessments:

- Performance Tasks
- Student created models
- Written/verbal explanations
- Peer assessment
- Self-assessment
- Critical Juncture Assessments

Summative Assessments:

- Associated unit tests, quizzes
- Labs and engineering based projects
- Student created models
- Written student explanations of phenomenon

Benchmark Assessments:

- Pre-Unit Assessments
- On-the-fly Assessments

Knowledge & Skills

Enduring Understandings:

- To survive, animals and plants need to get water, air, and food.
- Animals and plants have structures that help them do what they need to do to survive.
- To survive, animals and plants need to get water, air, and food, and to not be eaten.
- Many animals use their sharp structures to make animals and plants easier to eat.
- Animals and plants have defenses, structures that keep other animals from eating them.
- Scientists can make things that copy animal or plant structures to solve human problems.
- When plant and animal offspring grow up, they defend themselves in the same way as their parents. (3.3)

Essential Questions:

- What do animals and plants need to do to survive?
- How do animals and plants do what they need to do to survive?
- How do animals eat other living things?
- How do animals and plants defend themselves?
- How can we use ideas about animal and plant defenses to solve a problem?
- How do animal and plant offspring defend themselves when they grow up?
- How do animal and plant offspring defend themselves when they are young?
- How do scientists make and use models to explain their ideas?

<ul style="list-style-type: none"> Some kinds of young offspring get help from their parents and other kinds of young offspring survive on their own. 	
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Core Instructional & Supplemental Materials

<p>Suggested Activities/Resources:</p> <ul style="list-style-type: none"> HMH Science dimensions BrainPOP https://www.brainpop.com/science/ New Jersey Center for Teaching & Learning Khan Academy National Science Teachers Association Better Lessons- Science Next Generation Science Instructional Resources National Geographic Learning 	<p>Varied Levels of Text:</p> <ul style="list-style-type: none"> <i>Tortoise Parts</i> Whose Lunch is This? Parents and Offspring Frog Models <i>Spikes, Spines, and Shells: A Handbook of Defenses</i>
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Unit 6: Objects and Patterns in the Sky	Duration: 30 days- ongoing
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Standards/Learning Targets

New Jersey Student Learning Standards:

- 1-ESS1-1-** Use observations of the sun, moon, and stars to describe patterns that can be predicted. [Clarification Statement: Examples of patterns could include that the sun and moon appear to rise in one part of the sky, move across the sky, and set; and stars other than our sun are visible at night but not during the day.] [Assessment Boundary: Assessment of star patterns is limited to stars being seen at night and not during the day.]
- 1-ESS1-2-** Make observations at different times of year to relate the amount of daylight to the time of year. [Clarification Statement: Emphasis is on relative comparisons of the amount of daylight in the winter to the amount in the spring or fall.] [Assessment Boundary: Assessment is limited to relative amounts of daylight, not quantifying the hours or time of daylight.]

Performance Expectation	
<p>1-ESS1-1- Use observations of the sun, moon, and stars to describe patterns that can be predicted. [Clarification Statement: Examples of patterns could include that the sun and moon appear to rise in one part of the sky, move across the sky, and set; and stars other than our sun are visible at night but not during the day.] [Assessment Boundary: Assessment of star patterns is limited to stars being seen at night and not during the day.]</p>	
Science and Engineering Practices	Disciplinary Core Ideas
<p>Analyzing and Interpreting Data</p> <ul style="list-style-type: none"> Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. 	<p>ESS1.A: The Universe and its Stars</p> <ul style="list-style-type: none"> Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted.
Crosscutting Concepts	Learning Objectives

Patterns

- Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.

Scientific Knowledge Assumes an Order and Consistency in Natural Systems

- Science assumes natural events happen today as they happened in the past. Many events are repeated.

- With guidance, students use graphical displays (e.g., picture, chart) to organize data from given observations
- Students identify and describe* patterns in the organized data
- Students use the identified patterns of the motions of objects in the sky to provide evidence that future appearances of those objects can be predicted

Performance Expectation

1-ESS1-2- Make observations at different times of year to relate the amount of daylight to the time of year. [Clarification Statement: Emphasis is on relative comparisons of the amount of daylight in the winter to the amount in the spring or fall.] [Assessment Boundary: Assessment is limited to relative amounts of daylight, not quantifying the hours or time of daylight.]

Science and Engineering Practices**Disciplinary Core Ideas****Planning and Carrying Out Investigations**

- Make observations (firsthand or from media) to collect data that can be used to make comparisons.

ESS1.B: Earth and the Solar System

- Seasonal patterns of sunrise and sunset can be observed, described, and predicted.

Crosscutting Concepts**Learning Objectives****Patterns**

- Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.

- Students identify and describe* the phenomenon and purpose of the investigation, which include the following idea: the relationship between the amount of daylight and the time of year.
- Based on the given plan for the investigation, students (with support) describe* the data and evidence that will result from the investigation, including observations (firsthand or from media) of relative length of the day (sunrise to sunset) throughout the year
- According to the given investigation plan, students collaboratively make and record observations about the relative length of the day in different seasons to make relative comparisons between the amount of daylight at different times of the year (e.g., summer, winter, fall, spring).

Primary Interdisciplinary Connections:

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<p>Summative Assessments:</p> <ul style="list-style-type: none"> ● Associated unit tests, quizzes ● Labs and engineering based projects ● Student created models ● Written student explanations of phenomenon 	<p>Benchmark Assessments:</p> <ul style="list-style-type: none"> ● Pre-Unit Assessments ● On-the-fly Assessments

Knowledge & Skills

<p>Enduring Understandings:</p>	<p>Essential Questions:</p>
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- We can see the sun in the sky during the daytime and the stars in the sky during the nighttime.
- Right now, the sky looks different to people in different places on Earth.
- Earth is round like a ball.
- It is daytime for people in places on Earth that are facing the sun.
- It is nighttime for people in places on Earth that are not facing the sun.
- The sun looks like it is in different places in the sky at different times.
- As Earth spins, we face different directions, so the sky looks different to us.
- Daytime is shorter and nighttime is longer in winter than in other seasons.

- What can we see in the sky at different times?
- What does the sky look like to people in different places on Earth right now?
- Why is it daytime in some places on Earth when it is nighttime in other places?
- Where is the sun in the sky at different times?
- Why do we see the sun in different places in the sky during the daytime, and then not at all during the nighttime?
- What will we see in the sky at the same times on a different day?
- Why does the sun follow the same pattern in the sky every day?
- How do the days change over a year?

Core Instructional & Supplemental Materials

Suggested Activities/Resources:

- <https://mysteryscience.com/sky/mystery-1/sun-shadows-daily-patterns/82?r=6359979>
- <https://betterlesson.com/lesson/613470/observing-the-sun>
- Make a solar eclipse model. (www.education.com)
- Draw pictures of the sun, moon and stars.
- Make predictions about how the earth and moon move in the sky.
- Observe and measure the sun's position in the sky and how shadows change throughout the day.
- Make drawings of the four seasons and where the moon and sun will be positioned in the sky.
- Teach students about the phases of the moon, and make models using Oreo cookies.
- <http://www.alvordschools.org/cms/lib8/CA01900929/Centricity/Domain/2616/1st%20Grade%20Teachers%20Guide%20Complete.pdf>
- HMH Science dimensions

Varied Levels of Text:

- *After Sunset*
- *Nighttime Investigations*
- *What Spins?*
- *A Walk Through the Seasons*
- *Patterns of Earth and Space*