

Long Beach Island Consolidated School District Curriculum Guide

Grade: 1	Content Area: Science
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Introduction

Throughout these units, students explore concepts and phenomena related to characteristics of living things, properties of light and sound, communicating with light and sound, and patterns in the sky. Science and engineering practices include constructing explanations, designing solutions, and in developing and using models, planning and carrying out investigations, constructing explanations, and designing solutions. Crosscutting concepts of patterns, structure and function and influence of engineering, technology, and science on society and the natural world are also integrated throughout the units. Students are expected to demonstrate proficiency in the practices as well as core ideas.

Original Adoption: October 23, 2018
Revised on: July 1, 2019
Revised by: C. McBride, C.Sheplin
Revised on: August 16, 2022
Revised by: Cathy McBride

Pacing Guide	
Unit 1: Sound	25 days
Unit 2: Light	25 days
Unit 3: Sky and Earth	25 Days
Unit 4: Living Things	25 days
Unit 5: Parents and Offspring	25 days

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Grade: 1	Content Area: Science
Unit 1: Sound	Duration: 25 days
Science Standards 1-PS4-1, 1-PS4-4, K-2-ETS 1-1	
Disciplinary Core Ideas PS4.A Wave Properties Sound can make matter vibrate, and vibrating matter can make sound. PS4.C Information Technologies and Instrumentation People use devices to send and receive information ETS1.A Defining and Delimiting Engineering Problems 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. Before beginning to design a solution, it is important to clearly understand the problem. ETS1.B Developing Possible Solutions Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people.	
Science and Engineering Practices SEP.2 Developing and Using Models Develop a simple model based on evidence to represent a proposed object or tool. SEP.3 Planning and Carrying Out Investigations Plan and conduct investigations collaboratively to produce evidence to answer a question. SEP.6 Constructing Explanations and Designing Solutions Use tools and materials provided to design a device that solves a specific problem. SEP.7 Engaging in Argument from Evidence Construct an argument with evidence to support a claim.	
Crosscutting Concepts CCC.2 Cause and Effect Simple test can be designed to gather evidence to support or refute student ideas about causes.	
Connections to Nature of Science Science is a Human Endeavor Scientists and engineers are guided by habits of mind such as intellectual honesty, tolerance of ambiguity, skepticism, and openness to new ideas.	
Technology Standard(s) 8.2.2.ED.2: Collaborate to solve a simple problem, or to illustrate how to build a product using the design process. (K-2-ETS1-1) 8.2.2.ED.3: Select and use appropriate tools and materials to build a product using the design process. (K-2-ETS1-1)	

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Interdisciplinary Standard(s) ELA/Literacy

SL.1.1 Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.

W.1.8 With guidance and support from adults, recall information from experience or gather information from provided sources to answer a question.

Enduring Understandings

All sound comes from a source.

A source makes a sound because part of it is vibrating.

Sound can make matter vibrate, and vibrating matter can make sound.

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

People use sound to communicate.

Essential Questions

What happens when something starts making a sound?

How do we make different vibrations to make different kinds of sounds?

How do instruments make sound?

How can we design a device to send messages?

How do people use sound to communicate?

Career Readiness, Life Literacies, and Key Skills Practices

The following skills are encouraged and taught:

Demonstrate creativity and innovation.

Utilize critical thinking to make sense of problems and persevere in solving them.

Use technology to enhance productivity increase collaboration and communicate effectively

Work productively in teams while using cultural/global competence.

Career Readiness, Life Literacies, and Key Skills Standards

9.4.2.Cl.1: Demonstrate openness to new ideas and perspectives (K-2 ETS1-1)

9.4.2.Cl.2: Demonstrate originality and inventiveness in work (K-2 ETS1-1)

9.4.2.CT.3: Use a variety of types of thinking to solve problems (e.g., inductive, deductive) (K-2 ETS1-1)

LGBT and Disabilities Law N.J.S.A 18A:35-4.35 Instruction on the political, economic, and social integration of persons with disabilities and lesbian, gay, bisexual, and transgender people, in an appropriate place in the curriculum

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Amistad Law: N.J.S.A 18A:52:16A-88-4.35 Instruction regarding the contributions of African-Americans to our country in an appropriate place in the curriculum of secondary school students.

Holocaust Law N.J.S.A 18A:35-28
 Instruction on the Holocaust and genocides in an appropriate place in the curriculum with an emphasis on the personal responsibility that each citizen bears to fight racism and hatred whenever and wherever it happens.

Student Learning Goals/Objectives
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<p><i>Students will know:</i></p> <p>How to vibrate objects to make sounds. How to plan an investigation to determine how objects make sounds. How to describe sounds using pitch and volume. How size affects sounds. How people use sounds to communicate.</p>	<p><i>Students will be able to:</i></p> <p>1-PS4-1 Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. 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. K-2-ETS1-1 Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.</p>
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Assessment Evidence

<p>Performance Tasks</p> <p>Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. (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.)</p>	<p>Other Assessments</p> <p>Formative:</p> <ul style="list-style-type: none"> ● Lesson quizzes, and reviews ● Student investigations and models ● Language Arts writing activities ● Graphic Organizers & Guided Note Taking ● Directed Reading ● Cooperative Group Learning ● Homework ● Journal Entries ● Exit Tickets
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<p>“Design a device using Morse Code to create a word.” p. 21 “How can an instrument send a secret?” p.25 “Alert! Alert!” (Improve the design of a smartphone’s bad weather alert.) p.26-27</p>	<ul style="list-style-type: none"> ● Polls/ Surveys with self evaluation component ● Jigsaw ● Think, Pair, Share ● Quizzes <p>Alternative:</p> <ul style="list-style-type: none"> ● Modified tests and quizzes ● Group work ● Peer assessments ● Labs ● Projects ● Portfolio Assessments <p>Summative</p> <ul style="list-style-type: none"> ● Unit Test/Topic Test ● Unit Project ● Performance Assessment/Tasks ● Engineering projects <p>Benchmark Assessments:</p> <ul style="list-style-type: none"> ● Unit pre-test ● Beginning of the year, mid year, and end of the year SGO
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Core Instructional & Supplemental Materials
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<p>Suggested Activities/Resources:</p> <ul style="list-style-type: none"> ● Savvas Realize “Elevate Science” <ul style="list-style-type: none"> ○ Lesson explorations ○ Hands-on activities ○ Virtual Labs ○ Video based projects ○ Performance tasks ○ Engineering projects ○ Student investigations <p>“Design a device using Morse Code to create a word.” p. 21 “How can an instrument send a secret?” p.25 “Alert! Alert!” (Improve the design of a smartphone’s bad weather alert.) p.26-27</p>	<p>Varied Levels of Text:</p> <ul style="list-style-type: none"> ● leveled readers ● Newsela ● Storyworks ● <i>Engineering with Light and Sound</i> ● <i>Let’s Test!</i> ● <i>What Vibrates?</i> ● <i>Lowery, L. (2012). What makes different sounds?</i> ● <i>Waring, G. (2009). Oscar and the bat: A book about sound.</i> ● <i>Showers, P. (1961). The listening walk</i> ● <i>Rosinsky, N. (2002). Sound: Loud, soft, high, and low</i>
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Modifications and Accommodations

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English Language Learners:

- Provide pictures and well labeled models
- Speak slowly and gesture when necessary
- Pre-teach vocabulary words
- Extended time on assessments
- Small group for assessment
- Review Vocabulary
- Allow for alternate responses during activities and assessments
- Literacy and language support strategies including discourse
- Use a poster, slide, or picture to support student listening in science such as GLAD pictorial input chart
- Preview science texts with students, discussing salient text features such as tables, graphs, and photographs before they read it.
- Provide summaries and include native language texts.
- Provide sentence stems for all students to use, especially to support complex verbal practices like argumentation, explanation, and communication.
- Engage ELs in authentic vocabulary exploration as they try to make their thoughts meaningful to others through writing. Provide dictionaries or [Google Translate](#). Look beyond grammar and spelling to understand student ideas.
- Home culture connections

Special Education/504 Plans/Students with Disabilities:

- Follow specific IEP/504 accommodations and modifications
- Strategic grouping
- Pre-teach concepts
- Small group for assessments
- Check in's during experiments to help refocus
- Allow alternate assignments and assessments
- Differentiated Instruction

Students at Risk of Failure:

- Strategic grouping
- Pre-teach concepts
- Small group for assessments
- Check in's during experiments to help refocus
- 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
- Be flexible with assignments
- Offer several alternatives from which all students can choose.
- Allow students to finish assignments independently, or give them the opportunity to complete tasks at their own pace.
- 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.

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- Maintain expectations while offering choice and soliciting input
- Connect concepts to students' sense of "place" as physical, historical, and sociocultural dimensions
- Ask questions that elicit students' funds of knowledge
- Use cultural artifacts that are meaningful
- Use project-based learning as a form of connected science
- Provide resources for science instruction

Culturally Diverse:

- Involve families in student learning
- 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
- Teach study skills
- Provide students with necessary academic resources and materials
- Allow for alternative assignments
- Provide visuals
- Assign peer tutor
- Support verbal explanations with non verbal cues: Gestures/ facial expressions Props, realia, manipulatives, concrete materials Visuals, graphs, pictures, maps
- Provide positive praise to increase motivation
- Provide real world connections and emphasize the value of education
- Communicate high expectations for the success of all students
- Use cultural artifacts that are meaningful relevant
- Integrate community involvement
- Include role models and mentors of similar racial or ethnic backgrounds

Gifted and Talented

- Peer mediated strategies
- Cooperative learning groups
- Differentiated instruction

Presentation accommodations allow a student to:

- Vary the method of presentation: lecture, small groups, large group, demonstration, individual experimentation
- Explore real world connections
- Use technology tools to enhance content

Response accommodations allow a student to:

- Turn and Talk
- Reward risk taking while encouraging students to think "outside of the box"

Setting accommodations allow a student to:

- Use flexible seating
- Have choice in seating/grouping

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<p><i>Timing accommodations allow a student to:</i></p> <ul style="list-style-type: none"> ● Have flexible pacing in terms of content, assignments, and assessments ● Explore extended activities <p><i>Scheduling accommodations allow a student to:</i></p> <ul style="list-style-type: none"> ● Establish a timeline for completing a project ● Have rigorous Pacing <p><i>Organization skills accommodations allow a student to:</i></p> <ul style="list-style-type: none"> ● Model executive functioning ● Utilize independent skills practices <p><i>Assignment modifications allow a student to:</i></p> <ul style="list-style-type: none"> ● Complete enrichment tasks ● Write longer passages on essays and open ended responses including academic vocabulary ● Answer higher order thinking questions ● Cite text evidence ● Create alternate projects or assignments, student developed rubrics, student choice when completing a project or alternate labs <p><i>Curriculum modifications provide:</i></p> <ul style="list-style-type: none"> ● Topics of interest to the student and/or relevant to how the world works ● Students access to supplemental reading materials matched to individual student lexiles ● Opportunities for open-ended, self-directed activities ● Opportunities to get graded or assessed using a different standard than the one for others.

Unit 2: Light	Duration: 25 days
<p>Science Standards 1-PS4-2, 1-PS4-3, 1-PS4-4, K-2 ETS1-1</p>	
<p>Disciplinary Core Ideas PS4.B Electromagnetic Radiation PS4.C Information Technologies and Information</p>	
<p>Science and Engineering Practices SEP.3 Planning and Carrying Out Investigations Plan and conduct investigations collaboratively to produce evidence to answer a question. SEP.6 Constructing Explanations and Designing Solutions Use tools and materials provided to design and build a device that solves a specific problem or a solution to a specific problem Make observations to explain natural phenomena based on evidence.</p>	

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Content Area: Science

Crosscutting Concepts

CCC.2 Cause and Effect Events have causes that generate observable patterns.

Connections to Nature of Science Science is a Human Endeavor

Scientists and engineers are guided by habits of mind such as intellectual honesty, tolerance of ambiguity, skepticism, and openness to new ideas.

Technology Standard(s)

8.2.2.ED.2: Collaborate to solve a simple problem, or to illustrate how to build a product using the design process. (K-2-ETS1-1)

8.2.2.ED.3: Select and use appropriate tools and materials to build a product using the design process. (K-2-ETS1-1)

8.2.2.NT.2: Brainstorm how to build a product, improve a designed product, fix a product that has stopped working, or solve a simple problem. (K-2-ETS1-1, 1-PS4-4)

Interdisciplinary Standard(s) ELA/Literacy

W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.

SL.1.1 Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and large groups.

MP.5 Use appropriate tools strategically.

1.MD.A.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object.

Enduring Understandings

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

Objects can be seen if light is available to illuminate them or if they give off their own light

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

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

Essential Questions

What happens when an object blocks light?

How do materials affect light?

How can we use light to send a message?

How can you use light to see?

How can light keep us safe?

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Career Readiness, Life Literacies, and Key Skills Practices
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The following skills are encouraged and taught:
 Demonstrate creativity and innovation.
 Utilize critical thinking to make sense of problems and persevere in solving them.
 Use technology to enhance productivity increase collaboration and communicate effectively
 Work productively in teams while using cultural/global competence.

Career Readiness, Life Literacies, and Key Skills Standards
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9.4.2.CI.1: Demonstrate openness to new ideas and perspectives (K-2 ETS1-1, 1-PS4-4)
 9.4.2.CI.2: Demonstrate originality and inventiveness in work (K-2 ETS1-1, 1-PS4-4)
 9.4.2.CT.3: Use a variety of types of thinking to solve problems (e.g., inductive, deductive)
 (K-2 ETS1-1, 1-PS4-4)

LGBT and Disabilities Law N.J.S.A 18A:35-4.35 Instruction on the political, economic, and social integration of persons with disabilities and lesbian, gay, bisexual, and transgender people, in an appropriate place in the curriculum

Amistad Law: N.J.S.A 18A:52:16A-88-4.35 Instruction regarding the contributions of African-Americans to our country in an appropriate place in the curriculum of secondary school students.

Holocaust Law N.J.S.A 18A:35-28
 Instruction on the Holocaust and genocides in an appropriate place in the curriculum with an emphasis on the personal responsibility that each citizen bears to fight racism and hatred whenever and wherever it happens.

Student Learning Goals/Objectives	
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Students will know:
 How to send a message with light.
 How to design tests to gather evidence about properties and behavior of light.
 Different materials interact with light differently- light can be blocked completely, some light can pass through, or all light can pass through.
 What happens when objects block light.

Students will be able to:
1-PS4-2 Make observations to construct an evidence based account that objects can be seen only when illuminated.
1-PS4-3 Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam 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.
K-2-ETS1-1 Ask questions, make observations, and gather information about a

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	situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
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Assessment Evidence

<p>Performance Tasks Design simple tests to gather evidence to support or refute ideas about cause and effect relationships.</p> <p>Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena: Make observations (e.g., in a completely dark room, using a pinhole box, using video of a cave explorer with a flashlight) to construct an evidence based account that objects can be seen only when illuminated (from an external light source or by an object giving off its own light)</p> <p>Plan and conduct investigations collaboratively to produce data to serve as the basis for evidence to answer a question: Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light. Materials can be: – Transparent (clear plastic, glass) – Translucent (wax paper, thin cloth) – Opaque (cardboard, construction paper)</p>	<p>Other Assessments</p> <p>Formative:</p> <ul style="list-style-type: none"> ● Lesson quizzes, and reviews ● Student investigations and models ● Language Arts writing activities ● Graphic Organizers & Guided Note Taking ● Directed Reading ● Cooperative Group Learning ● Homework ● Journal Entries ● Exit Tickets ● Polls/ Surveys with self evaluation component ● Jigsaw ● Think, Pair, Share ● Quizzes <p>Alternative:</p> <ul style="list-style-type: none"> ● Modified tests and quizzes ● Group work ● Peer assessments ● Labs ● Projects ● Portfolio Assessments <p>Summative</p> <ul style="list-style-type: none"> ● Unit Test/Topic Test ● Unit Project ● Performance Assessment/Tasks ● Engineering projects <p>Benchmark Assessments:</p> <ul style="list-style-type: none"> ● Unit pre-test ● Beginning of the year, mid year, and end of the year SGO
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Core Instructional & Supplemental Materials

Suggested Activities/Resources:

- Savvas Realize “Elevate Science”
 - Lesson explorations
 - Hands-on activities
 - Virtual Labs
 - Video based projects
 - Performance tasks
 - Engineering projects
 - Student investigations

Varied Levels of Text:

- leveled readers
- Newsela
- Storyworks
- *Engineering with Light and Sound*
- *Can You See in the Dark?*
- *What Made this Shadow?*
- *Boyd, L. (2014). Flashlight*
- *Waring, G. (2008). Oscar and the moth: A book about light and dark*
- *Rocco, J. (2011). Blackout*
- *Yankey, L. (2015). Sun and moon.*
- *Zschock, H. (2005). Whoo’s there? A bedtime shadow book*
- *Golding, E. (2011). Moonlight animals.*
- *Rocco, J. (2011). Blackout.*
- *Marino, G. (2015). Night animals.*

Modifications and Accommodations

English Language Learners:

- Provide pictures and well labeled models
- Speak slowly and gesture when necessary
- Pre-teach vocabulary words
- Extended time on assessments
- Small group for assessment
- Review Vocabulary
- Allow for alternate responses during activities and assessments
- Literacy and language support strategies including discourse
- Use a poster, slide, or picture to support student listening in science such as GLAD pictorial input chart
- Preview science texts with students, discussing salient text features such as tables, graphs, and photographs before they read it.
- Provide summaries and include native language texts.
- Provide sentence stems for all students to use, especially to support complex verbal practices like argumentation, explanation, and communication.
- Engage ELs in authentic vocabulary exploration as they try to make their thoughts meaningful to others through writing. Provide dictionaries or [Google Translate](https://www.google.com/translate). Look beyond grammar and spelling to understand student ideas.
- Home culture connections

Special Education/504 Plans/Students with Disabilities:

- Follow specific IEP/504 accommodations and modifications
- Strategic grouping

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- Pre-teach concepts
- Small group for assessments
- Check in's during experiments to help refocus
- Allow alternate assignments and assessments
- Differentiated Instruction

Students at Risk of Failure:

- Strategic grouping
- Pre-teach concepts
- Small group for assessments
- Check in's during experiments to help refocus
- 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
- Be flexible with assignments
- Offer several alternatives from which all students can choose.
- Allow students to finish assignments independently, or give them the opportunity to complete tasks at their own pace.
- 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
- Connect concepts to students' sense of "place" as physical, historical, and sociocultural dimensions
- Ask questions that elicit students' funds of knowledge
- Use cultural artifacts that are meaningful
- Use project-based learning as a form of connected science
- Provide resources for science instruction

Culturally Diverse:

- Involve families in student learning
- 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
- Teach study skills
- Provide students with necessary academic resources and materials
- Allow for alternative assignments
- Provide visuals
- Assign peer tutor
- Support verbal explanations with non verbal cues: Gestures/ facial expressions Props, realia, manipulatives, concrete materials Visuals, graphs, pictures, maps
- Provide positive praise to increase motivation
- Provide real world connections and emphasize the value of education

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- Communicate high expectations for the success of all students
- Use cultural artifacts that are meaningful relevant
- Integrate community involvement
- Include role models and mentors of similar racial or ethnic backgrounds

Gifted and Talented

- Peer mediated strategies
- Cooperative learning groups
- Differentiated instruction

Presentation accommodations allow a student to:

- Vary the method of presentation: lecture, small groups, large group, demonstration, individual experimentation
- Explore real world connections
- Use technology tools to enhance content

Response accommodations allow a student to:

- Turn and Talk
- Reward risk taking while encouraging students to think “outside of the box”

Setting accommodations allow a student to:

- Use flexible seating
- Have choice in seating/grouping

Timing accommodations allow a student to:

- Have flexible pacing in terms of content, assignments, and assessments
- Explore extended activities

Scheduling accommodations allow a student to:

- Establish a timeline for completing a project
- Have rigorous Pacing

Organization skills accommodations allow a student to:

- Model executive functioning
- Utilize independent skills practices

Assignment modifications allow a student to:

- Complete enrichment tasks
- Write longer passages on essays and open ended responses including academic vocabulary
- Answer higher order thinking questions
- Cite text evidence
- Create alternate projects or assignments, student developed rubrics, student choice when completing a project or alternate labs

Curriculum modifications provide:

- Topics of interest to the student and/or relevant to how the world works

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- Students access to supplemental reading materials matched to individual student lexiles
- Opportunities for open-ended, self-directed activities
- Opportunities to get graded or assessed using a different standard than the one for others.

Unit 3: Sky and Earth

Duration: 25 days

Science Standards

1-ESS1-1, 1-ESS1-2, K-2 ETS1-1, K-2 ETS1-2

Disciplinary Core Ideas

ESS1.A The Universe and Its Stars Patterns of movement of the sun, moon and stars as seen from Earth can be predicted.

ESS1.B Earth and the Solar System Patterns of changes in daylight and seasons can be observed, described and predicted.

ETS1.A Defining and Delimiting Engineering Problems 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. Before beginning to design a solution, it is important to clearly understand the problem.

ETS1.B Developing Possible Solutions Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people.

Science and Engineering Practices

SEP.2 Developing and Using Models Develop and use models to represent patterns in the natural world.

SEP.3 Planning and Carrying Out Investigations Plan and conduct investigations to collect data as evidence to answer a question.

SEP.4 Analyzing and Interpreting Data Use observations to describe patterns and/or relationships in the natural world.

SEP.8 Obtaining, Evaluating, and Communicating Information Read grade-appropriate texts and use media to obtain scientific information to determine patterns in the natural world.

Crosscutting Concepts

CCC.1 Patterns Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.

CCC.2 Cause and Effect Events have causes that generate observable patterns.

Connections to Nature of Science Science is a Human Endeavor

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Scientists and engineers are guided by habits of mind such as intellectual honesty, tolerance of ambiguity, skepticism, and openness to new ideas.

Technology Standard(s)

8.2.2.ED.2: Collaborate to solve a simple problem, or to illustrate how to build a product using the design process. (K-2-ETS1-1, 1-ESS1-1, 1-ESS1-2)

8.2.2.ED.3: Select and use appropriate tools and materials to build a product using the design process. (K-2-ETS1-1, 1-ESS1-1, 1-ESS1-2)

8.2.2.NT.2: Brainstorm how to build a product, improve a designed product, fix a product that has stopped working, or solve a simple problem. (K-2-ETS1-1, 1-ESS1-1, 1-ESS1-2)

Interdisciplinary Standard(s) ELA/Literacy

RI.2.1 Ask and answer questions as who, what, where, when, why and how to demonstrate understanding of key details in a text.

W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.

MP.2 reason abstractly and quantitatively.

MP.4 Model with mathematics.

MP.5 Use appropriate tools strategically.

1.OA.A.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing with unknowns in all positions, e.g. by using objects, drawings, and equations to represent the problem.

Enduring Understandings

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.

Science assumes that natural events happen today as they happened in the past.

Many events are repeated.

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

Patterns in the motion of the sun, moon, and stars in the sky can be observed, described, and predicted.

Essential Questions

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What objects are in the sky and how do they move?
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 time 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?
How does the sun cause seasons?

Career Readiness, Life Literacies, and Key Skills Practices

The following skills are encouraged and taught:

Demonstrate creativity and innovation.

Utilize critical thinking to make sense of problems and persevere in solving them.

Use technology to enhance productivity increase collaboration and communicate effectively

Work productively in teams while using cultural/global competence.

Career Readiness, Life Literacies, and Key Skills Standards

9.1.2.CAP.1: Make a list of different types of jobs and describe the skills associated with each job. (1-ESS1-1)

9.4.2.Cl.1: Demonstrate openness to new ideas and perspectives (K-2 ETS1-1, 1-ESS1-2)

9.4.2.Cl.2: Demonstrate originality and inventiveness in work (K-2 ETS1-1, 1-ESS1-1)

9.4.2.CT.3: Use a variety of types of thinking to solve problems (e.g., inductive, deductive) (K-2 ETS1-1)

LGBT and Disabilities Law N.J.S.A 18A:35-4.35 Instruction on the political, economic, and social integration of persons with disabilities and lesbian, gay, bisexual, and transgender people, in an appropriate place in the curriculum

Amistad Law: N.J.S.A 18A:52:16A-88-4.35 Instruction regarding the contributions of African-Americans to our country in an appropriate place in the curriculum of secondary school students.

Holocaust Law N.J.S.A 18A:35-28

Instruction on the Holocaust and genocides in an appropriate place in the curriculum with an emphasis on the personal responsibility that each citizen bears to fight racism and hatred whenever and wherever it happens.

Student Learning Goals/Objectives

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<p><i>Students will know:</i></p> <p>How to model motions of the Earth. How to use the identified patterns of the motions of objects in the sky to provide evidence that future appearances of those objects can be predicted</p> <p>How to 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.</p> <p>How to 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. How to 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). What a space scientist does.</p>	<p><i>Students will be able to:</i></p> <p>1-ESS1-1 Use observations of the sun, moon, and stars to describe patterns that can be predicted. 1-ESS1-2 Make observations at different times of the year to relate the amount of daylight to the time of year. K-2-ETS1-1 Ask questions, make observations, and gather information about a situation people want to 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.</p>
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Assessment Evidence

<p>Performance Tasks</p> <p>Observe and use patterns in the natural world as evidence and to describe phenomena:</p> <p>Use observations of the sun, moon, and stars to describe patterns that can be predicted. Make observations at different times of the year to relate the amount of daylight to the time of year.</p> <p>Read about careers involving space scientists.</p>	<p>Other Assessments</p> <p>Formative:</p> <ul style="list-style-type: none"> ● Lesson quizzes, and reviews ● Student investigations and models ● Language Arts writing activities ● Graphic Organizers & Guided Note Taking ● Directed Reading ● Cooperative Group Learning ● Homework ● Journal Entries ● Exit Tickets ● Polls/ Surveys with self evaluation component ● Jigsaw ● Think, Pair, Share ● Quizzes
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	<p>Alternative:</p> <ul style="list-style-type: none"> ● Modified tests and quizzes ● Group work ● Peer assessments ● Labs ● Projects ● Portfolio Assessments <p>Summative</p> <ul style="list-style-type: none"> ● Unit Test/Topic Test ● Unit Project ● Performance Assessment/Tasks ● Engineering projects <p>Benchmark Assessments:</p> <ul style="list-style-type: none"> ● Unit pre-test ● Beginning of the year, mid year, and end of the year SGO
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Core Instructional & Supplemental Materials	
<p>Suggested Activities/Resources:</p> <ul style="list-style-type: none"> ● Savvas Realize “Elevate Science” <ul style="list-style-type: none"> ○ Lesson explorations ○ Hands-on activities ○ Virtual Labs ○ Video based projects ○ Performance tasks ○ Engineering projects ○ Student investigations <p>https://www.siemensstemday.com/search/node?keys=The+Dynamic+Trio</p> <p>https://teaching.betterlesson.com/lesson/639226/patterns-of-daylight</p> <p>First grade Lesson Observing the Sun BetterLesson</p>	<p>Varied Levels of Text:</p> <ul style="list-style-type: none"> ● leveled readers ● Newsela ● Storyworks ● <i>After Sunset</i> ● <i>Nighttime Investigations</i> ● <i>What Spins?</i> ● <i>A Walk Through the Seasons</i> ● <i>Patterns of Earth and Space</i> ● Curtis, C. (2004). <i>I took the moon for a walk</i> ● Henkes, K. (2004). <i>Kitten’s first full moon</i> ● Asch, F. (2008). <i>The sun is my favorite star</i> ● Rockwell, A. (2002). <i>Our stars</i> ● Kleven, E. (2004). <i>Sun bread</i> ● Pfeffer, W. (2003). <i>The shortest day: Celebrating the winter solstice</i> ● Branley, F. (1974). <i>Sunshine makes the seasons</i> ● Gibbons, G. (1995) <i>The reason for seasons</i>

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Modifications and Accommodations

English Language Learners:

- Provide pictures and well labeled models
- Speak slowly and gesture when necessary
- Pre-teach vocabulary words
- Extended time on assessments
- Small group for assessment
- Review Vocabulary
- Allow for alternate responses during activities and assessments
- Literacy and language support strategies including discourse
- Use a poster, slide, or picture to support student listening in science such as GLAD pictorial input chart
- Preview science texts with students, discussing salient text features such as tables, graphs, and photographs before they read it.
- Provide summaries and include native language texts.
- Provide sentence stems for all students to use, especially to support complex verbal practices like argumentation, explanation, and communication.
- Engage ELs in authentic vocabulary exploration as they try to make their thoughts meaningful to others through writing. Provide dictionaries or [Google Translate](#). Look beyond grammar and spelling to understand student ideas.
- Home culture connections

Special Education/504 Plans/Students with Disabilities:

- Follow specific IEP/504 accommodations and modifications
- Strategic grouping
- Pre-teach concepts
- Small group for assessments
- Check in's during experiments to help refocus
- Allow alternate assignments and assessments
- Differentiated Instruction

Students at Risk of Failure:

- Strategic grouping
- Pre-teach concepts
- Small group for assessments
- Check in's during experiments to help refocus
- 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
- Be flexible with assignments
- Offer several alternatives from which all students can choose.
- Allow students to finish assignments independently, or give them the opportunity to complete tasks at their own pace.

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- 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
- Connect concepts to students' sense of "place" as physical, historical, and sociocultural dimensions
- Ask questions that elicit students' funds of knowledge
- Use cultural artifacts that are meaningful
- Use project-based learning as a form of connected science
- Provide resources for science instruction

Culturally Diverse:

- Involve families in student learning
- 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
- Teach study skills
- Provide students with necessary academic resources and materials
- Allow for alternative assignments
- Provide visuals
- Assign peer tutor
- Support verbal explanations with non verbal cues: Gestures/ facial expressions Props, realia, manipulatives, concrete materials Visuals, graphs, pictures, maps
- Provide positive praise to increase motivation
- Provide real world connections and emphasize the value of education
- Communicate high expectations for the success of all students
- Use cultural artifacts that are meaningful relevant
- Integrate community involvement
- Include role models and mentors of similar racial or ethnic backgrounds

Gifted and Talented

- Peer mediated strategies
- Cooperative learning groups
- Differentiated instruction

Presentation accommodations allow a student to:

- Vary the method of presentation: lecture, small groups, large group, demonstration, individual experimentation
- Explore real world connections
- Use technology tools to enhance content

Response accommodations allow a student to:

- Turn and Talk
- Reward risk taking while encouraging students to think "outside of the box"

Setting accommodations allow a student to:

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- Use flexible seating
- Have choice in seating/grouping

Timing accommodations allow a student to:

- Have flexible pacing in terms of content, assignments, and assessments
- Explore extended activities

Scheduling accommodations allow a student to:

- Establish a timeline for completing a project
- Have rigorous Pacing

Organization skills accommodations allow a student to:

- Model executive functioning
- Utilize independent skills practices

Assignment modifications allow a student to:

- Complete enrichment tasks
- Write longer passages on essays and open ended responses including academic vocabulary
- Answer higher order thinking questions
- Cite text evidence
- Create alternate projects or assignments, student developed rubrics, student choice when completing a project or alternate labs

Curriculum modifications provide:

- Topics of interest to the student and/or relevant to how the world works
- Students access to supplemental reading materials matched to individual student lexiles
- Opportunities for open-ended, self-directed activities
- Opportunities to get graded or assessed using a different standard than the one for others.

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Unit 5: Living Things	Duration: 25 days
Science Standards 1-LS1-1, K-2-ETS1-1, K-2 ETS1-2, K-2 ETS1-3	
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, air, and water. 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. ETS1.B Developing Possible Solutions Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. ETS.1.C Optimizing the Design Solution Because there is always more than one possible solution to a problem, it is useful to compare and test designs.	
Science and Engineering Practices SEP.1 Asking questions and Defining Problems Ask questions based on observations to find more information about the natural and/or designed world(s). SEP.2 Developing and Using Models Develop a simple model based on evidence to represent a proposed object or tool. SEP.3 Planning and Carrying Out Investigations Make observations (firsthand or from media) to collect data that can be used to make comparisons. SEP.4 Analyzing and Interpreting Data Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. SEP.8 Obtaining, Evaluating, and Communicating Information Read grade-appropriate texts and/or use media to obtain scientific information to describe patterns in the natural world.	
Crosscutting Concepts CCC.6 Structure and Function The shape and stability of structures of natural and designed objects are related to their function.	
Connections to Nature of Science Science is a Human Endeavor Scientists and engineers are guided by habits of mind such as intellectual honesty, tolerance of ambiguity, skepticism, and openness to new ideas.	
Technology Standard(s)	

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8.2.2.ED.2: Collaborate to solve a simple problem, or to illustrate how to build a product using the design process. (K-2-ETS1-1, 1-ESS1-1, 1-ESS1-2)

8.2.2.ED.3: Select and use appropriate tools and materials to build a product using the design process. (K-2-ETS1-1, 1-ESS1-1, 1-ESS1-2)

8.2.2.NT.2: Brainstorm how to build a product, improve a designed product, fix a product that has stopped working, or solve a simple problem. (K-2-ETS1-1, 1-ESS1-1, 1-ESS1-2)

Interdisciplinary Standard(s) ELA/Literacy

RI.1.1 Ask and answer questions about key details in a text.

RI.1.10 With prompting and support, read informational texts appropriately complex for grade.

W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.

MP.2 reason abstractly and quantitatively.

MP.4 Model with mathematics.

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.

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

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

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.

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.

Designs can be conveyed through sketches, drawings, or physical models.

These representations are useful in communicating ideas for a problem's solutions to other people.

Essential Questions

What do animals and plants need to do to survive?

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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?

Career Readiness, Life Literacies, and Key Skills Practices

The following skills are encouraged and taught:
 Demonstrate creativity and innovation.
 Utilize critical thinking to make sense of problems and persevere in solving them.
 Use technology to enhance productivity increase collaboration and communicate effectively
 Work productively in teams while using cultural/global competence.

Career Readiness, Life Literacies, and Key Skills Standards

9.1.2.CAP.1: Make a list of different types of jobs and describe the skills associated with each job. (1-ESS1-1)
 9.4.2.CI.1: Demonstrate openness to new ideas and perspectives (K-2 ETS1-1, 1-ESS1-1)
 9.4.2.CI.2: Demonstrate originality and inventiveness in work (K-2 ETS1-1)
 9.4.2.CT.3: Use a variety of types of thinking to solve problems (e.g., inductive, deductive) (K-2 ETS1-1)

LGBT and Disabilities Law N.J.S.A 18A:35-4.35 Instruction on the political, economic, and social integration of persons with disabilities and lesbian, gay, bisexual, and transgender people, in an appropriate place in the curriculum

Amistad Law: N.J.S.A 18A:52:16A-88-4.35 Instruction regarding the contributions of African-Americans to our country in an appropriate place in the curriculum of secondary school students.

Holocaust Law N.J.S.A 18A:35-28
 Instruction on the Holocaust and genocides in an appropriate place in the curriculum with an emphasis on the personal responsibility that each citizen bears to fight racism and hatred whenever and wherever it happens.

Student Learning Goals/Objectives

<p><i>Students will know:</i> Land and water environments</p>	<p><i>Students will be able to:</i> 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</p>
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<p>Parts of plants and animals that help them survive</p> <p>How animals stay safe by understanding animal senses and responses</p> <p>How people use nature to solve problems and design solutions.</p>	<p>them survive, grow, and meet their needs.</p> <p>K-2-ETS1-1 Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.</p> <p>K-2-ETS 1-2 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.</p> <p>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.</p>
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Assessment Evidence

<p>Performance Tasks</p> <p>Model and illustrate plant parts and their function..</p> <p>Demonstrate how people can learn from plant and animal parts.</p> <p>“How do whiskers help a cat?” p. 155</p> <p>“What can people learn from an acorn shell?”</p> <p>What Bioengineers do.</p>	<p>Other Assessments</p> <p>Formative:</p> <ul style="list-style-type: none"> ● Lesson quizzes, and reviews ● Student investigations and models ● Language Arts writing activities ● Graphic Organizers & Guided Note Taking ● Directed Reading ● Cooperative Group Learning ● Homework ● Journal Entries ● Exit Tickets ● Polls/ Surveys with self evaluation component ● Jigsaw ● Think, Pair, Share ● Quizzes <p>Alternative:</p> <ul style="list-style-type: none"> ● Modified tests and quizzes ● Group work ● Peer assessments ● Labs ● Projects ● Portfolio Assessments <p>Summative</p>
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	<ul style="list-style-type: none"> ● Unit Test/Topic Test ● Unit Project ● Performance Assessment/Tasks ● Engineering projects <p>Benchmark Assessments:</p> <ul style="list-style-type: none"> ● Unit pre-test ● Beginning of the year, mid year, and end of the year SGO
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Core Instructional & Supplemental Materials
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<p>Suggested Activities/Resources:</p> <ul style="list-style-type: none"> ● Savvas Realize “Elevate Science” <ul style="list-style-type: none"> ○ Lesson explorations ○ Hands-on activities ○ Virtual Labs ○ Video based projects ○ Performance tasks ○ Engineering projects ○ Student investigations <p>https://why.pbslearningmedia.org/resource/dc02.sci.life.colt.alive/is-it-alive/Living-and-Non-Living-Science-Living-Things-and-Their-Needs-BioEd-Online</p> <p>https://why.pbslearningmedia.org/resource/vscps.sci.life.seed/from-seed-to-fruit/</p> <p>https://why.pbslearningmedia.org/resource/hnkgard.sci.ess.water/think-garden-the-importance-of-water/</p> <p>https://why.pbslearningmedia.org/resource/5dea21b4-6c92-46ff-982c-8650f9429c01/think-garden-plant-structure/</p>	<p>Varied Levels of Text:</p> <ul style="list-style-type: none"> ● leveled readers ● Newsela ● Storyworks ● Career Connection ● Jenkins, S. (2014). Eye to eye: How animals see the world ● Lee, D. (2011). Biomimicry: Inventions inspired by nature. ● Fleming, C. (2013). Papa’s mechanical fish ● Knowles, S. (1988). Edward the emu ● Petty, D. (2015). I don’t want to be a frog ● Waddell, M. (2002). Owl babies ● Fleming, D. (1998). Mama cat has three kittens
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Modifications and Accommodations

<p>English Language Learners:</p> <ul style="list-style-type: none"> ● Provide pictures and well labeled models ● Speak slowly and gesture when necessary ● Pre-teach vocabulary words ● Extended time on assessments
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- Small group for assessment
- Review Vocabulary
- Allow for alternate responses during activities and assessments
- Literacy and language support strategies including discourse
- Use a poster, slide, or picture to support student listening in science such as GLAD pictorial input chart
- Preview science texts with students, discussing salient text features such as tables, graphs, and photographs before they read it.
- Provide summaries and include native language texts.
- Provide sentence stems for all students to use, especially to support complex verbal practices like argumentation, explanation, and communication.
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- Home culture connections

Special Education/504 Plans/Students with Disabilities:

- Follow specific IEP/504 accommodations and modifications
- Strategic grouping
- Pre-teach concepts
- Small group for assessments
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- Allow alternate assignments and assessments
- Differentiated Instruction

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- Provide academic resources for both home and school use
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Economically Disadvantaged:

- Provide clear, achievable expectations, do not lower academic requirements for them.
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- Be flexible with assignments
- Offer several alternatives from which all students can choose.
- Allow students to finish assignments independently, or give them the opportunity to complete tasks at their own pace.
- 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
- Connect concepts to students' sense of "place" as physical, historical, and sociocultural dimensions
- Ask questions that elicit students' funds of knowledge
- Use cultural artifacts that are meaningful

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- Use project-based learning as a form of connected science
- Provide resources for science instruction

Culturally Diverse:

- Involve families in student learning
- 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
- Teach study skills
- Provide students with necessary academic resources and materials
- Allow for alternative assignments
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- Assign peer tutor
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Gifted and Talented

- Peer mediated strategies
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Presentation accommodations allow a student to:

- Vary the method of presentation: lecture, small groups, large group, demonstration, individual experimentation
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Response accommodations allow a student to:

- Turn and Talk
- Reward risk taking while encouraging students to think “outside of the box”

Setting accommodations allow a student to:

- Use flexible seating
- Have choice in seating/grouping

Timing accommodations allow a student to:

- Have flexible pacing in terms of content, assignments, and assessments
- Explore extended activities

Scheduling accommodations allow a student to:

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- Establish a timeline for completing a project
- Have rigorous Pacing

Organization skills accommodations allow a student to:

- Model executive functioning
- Utilize independent skills practices

Assignment modifications allow a student to:

- Complete enrichment tasks
- Write longer passages on essays and open ended responses including academic vocabulary
- Answer higher order thinking questions
- Cite text evidence
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Curriculum modifications provide:

- Topics of interest to the student and/or relevant to how the world works
- Students access to supplemental reading materials matched to individual student lexiles
- Opportunities for open-ended, self-directed activities
- Opportunities to get graded or assessed using a different standard than the one for others.