PITTSGROVE TOWNSHIP SCHOOL DISTRICT

Pittsgrove Township School District

P.R.I.D.E. Patience Respect Integrity Diligence Empathy

Course Name: First Grade Science	**Grade Level(s): 1st Grade**
Department: Science	**Credits: N/A**
BOE Adoption Date: September 17, 2020	**Revision Date(s): August 5, 2020**

Course Description

Students will explore the scientific method through an inquiry-based environment, developing critical thinking and problem solving skills essential to becoming informed productive contributors to society in the 21st century. Students will engage in engineering and scientific practices and apply concepts to deepen their understanding of questioning, research, hypothesis, experimenting, collecting data, and analysis. Through the application of the scientific method, students will be able to draw conclusions, collaborate, and communicate results regarding living organisms, light, sound, and communication.

Mission Statement

The Pittsgrove Township School District believes in growing all learners to thrive. *The district offers an intellectually rigorous, dynamic curriculum aligned to state and national standards coupled with research-based practices in classrooms. The Pittsgrove Township School District strives to highlight critical thinking, problem-solving, intercultural literacy, digital literacy, collaboration, innovation, and a growth mindset as part of the instructional core of learning. The district provides high quality resources to provide young people the knowledge they need to approach the future as leaders and learners.*

Curriculum & Instruction Goals

1. To ensure students are college and career ready upon graduation
2. To vertically and horizontally align curriculum PreK-12 to ensure successful transition of students at each grade level
3. To identify individual student strengths and weaknesses utilizing various assessment measures (formative, summative, alternative, etc.) so as to differentiate instruction while meeting the rigor of the applicable content standards
4. To improve student achievement as assessed through multiple measures including, but not limited to, state testing, local assessments, and ongoing progress monitoring

How to Read this Document

This curricular document contains both a *pacing guide* and *curriculum units*. The pacing guide serves to communicate an estimated timeframe as to *when* critical knowledge and skills will be taught throughout the year. The pacing, however, may differ slightly depending upon the unique needs of each learner. The *curriculum units* contain more detailed information as to the content, goals, objectives, instructional strategies, resources, and assessments.

NJ Administrative Code and Statutes Key
^=Amistad Law **O=Diversity & Inclusion Law** **<>=Holocaust** **+=LGBT and Disabilities Law** ***=AAPI (Asian American and Pacific Islanders)** **$=Financial Literacy** **Use this key to understand where the NJ mandates are being implemented in the K-12 curriculum units.**

Pacing Guide

Course Title: Science 1
Prerequisite(s): Science K

Unit Title	Duration/ Month(s)	Related Standards	Learning Goals	Critical Knowledge and Skills
Unit 1: Patterns of Change in the Sky	**15 Instructional Days**	● 1-ESS1-1 ● 1-ESS1-2	● Students will be able to use observations of the sun, moon, and stars to describe patterns that can be predicted ● Students will be able to make observations at different times of the year to relate the amount of daylight to the time of year	● Making observations ● Drawing conclusions ● Making hypotheses ● Problem solving ● Data collection
Unit 2: Characteristics of Living Things	**15 Instructional Days**	● 1-LS3-1	● Students will be able to analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. ● Students will be able to read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.	● Making observations ● Drawing conclusions ● Making hypotheses ● Problem solving ● Data collection

Unit 3: Mimicking Organisms to Solve Problems	**25 Instructional Days**	• 1-LS1-1 • 1-LS1-2	• 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. • 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.	• Making observations • Drawing conclusions • Making hypotheses • Problem solving • Data collection
Unit 4: Light and Sound	**20 Instructional Days**	• 1-PS4-1 • 1-PS4-2 • 1-PS4-3 • 1-PS4-4	• Make observations to construct an evidence-based account that objects in darkness can be seen only when illuminated. • Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light. • Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.	• Making observations • Drawing conclusions • Making hypotheses • Problem solving • Data collection

Unit 5: Communicating With Light and Sound	**25 Instructional Days**	• 1-PS4-1 • 1-PS4-2 • 1-PS4-3 • 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. • 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. • 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.	• Making observations • Drawing conclusions • Making hypotheses • Problem solving • Data collection

Instructional Unit Map			
Course Title: First Grade Science			
Unit Title	Patterns of Change in the Sky	**Start Date:**	September
		Length of Unit:	15 Instructional Days

<table>
<tr><td>Content Standards
What do we want them to know, understand, & do?</td><td colspan="2">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 year to relate the amount of daylight to the time of year.</td><td>Learning Goals</td><td colspan="2">Students will be able to use observations of the sun, moon, and stars to describe patterns that can be predicted
Students will be able to make observations at different times of the year to relate the amount of daylight to the time of year</td></tr>
<tr><td>Essential Questions</td><td colspan="5">Can we predict how the sky will change over time?
What patterns of change can be predicted when observing the sun, moon, and stars?
What is the relationship between the amount of daylight and the time of year?</td></tr>
<tr><td rowspan="2">Assessments
How will we know they have gained the knowledge & skills?</td><td colspan="2">Formative</td><td colspan="2">Summative</td><td>Alternative</td></tr>
<tr><td colspan="2">Thumbs up/thumbs down
Interactive questioning
Teacher observation
Choral and individual responses to questioning
Center work
Checklists
Hand Signals
Graphic organizers
3-minute pause
Student conferencing
Exit card
Quizzes
Self-assessment
Journaling
Think-pair-share
One question, One comment</td><td colspan="2">Experiments
Projects
STEM Activities</td><td>Tactile center
Group presentation
Visual representation of star patterns</td></tr>
</table>

Unit Pre-Assessment(s) *What do they already know?*	● Interactive questioning ● Assess prior knowledge of sky patterns			
Instructional Strategies/ Student Activities	● Think, pair, share ● Online media resources ● Data collection journals ● Mystery Science			
Instructional/Assessment Scaffolds *(Modifications /Accommodations) – planned for prior to instruction*	**English Language Learners**	**Special Education Learners**	**Struggling Learners**	**Advanced Learners**
	● Vocab wall ● Oral directions ● Single-step directions ● Picture directions ● Classroom buddy ● Immediate feedback ● Quiz/Test retake	● Class schedule ● Oral directions w/repeating ● Preferred seating ● Pictures/ ● graphics ● Extra time ● Provide examples/show work ● Quiz/Test retakes	● Chunking assignments ● Provide extra time ● Class schedule ● Timer ● Pictures/graphics ● Provide examples ● Test retakes ● Show work ● Classroom buddy ● Small group instruction	● Tiered Assignments ● Independent Study ● Flexible grouping ● Opportunities for leadership ● Adding technology

		• Classroom buddy • Timer		
Differentiated Instructional Methods: *(Multiple means for students to access content and multiple modes for student to express understanding)*	**Access** (Resources and/or Process)		**Expression** (Products and/or Performance)	
	• Mini lessons/small group instruction • Learning centers • Flexible grouping • Library area: books & resources available for student exploration. • Experiments on display • Ipads (science apps)		• Choice of learning station • Choice of activity format • Presentation/Peer Sharing • Science Lessons	
Vocabulary *Highlight key vocabulary (both Tier II and Tier III words)*	Tier II: sky, stars, sun, planets, earth, pattern, moon, daylight, Tier III: observe, conclude, hypothesize, compare, contrast, explore, predict, analyze, investigate, describe			

Integration of Technology SAMR	**Substitution**
	• View Videos on Brain Pop Jr.
	  ○ Moon
	  ○ Sun
	  ○ Earth			

	○ Solar System ○ Making Observations ○ Science Projects ● View Mystery Science videos ○ Sun, Shadows, & Daily Patterns ○ Local Weather Patterns & Weather Predictions ○ Sun & Daily Patterns ○ Climate, Geography, & Global Weather Patterns ○ Stars & Daily Patterns ○ Earth's Rotations and Daily Patterns ● View Mystery Doug Videos ○ Has a shooting star ever landed on someone? ○ Why is the sky blue? ○ What is the moon made of? ○ What causes the Northern Lights? ○ How often do eclipses happen? **Augmentation:** ● Students will take a quiz following the jr.brainpop.com videos. ● Students will use an ipad to explore scientific concepts **Modification:** ● Seesaw program. Assignments can be differentiated according to individual level **Redefinition:** ● Students will give present their own patterns of the sky
Interdisciplinary Connections NJ Student Learning Standards	**ELA**: ● W.1.7- Participate in shared research and writing projects (e.g., explore a number of "how-to" books on a given topic and use them to write a sequence of instructions). (1-ESS1-1),(1-ESS1-2) ● W.1.8- With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-ESS1-1),(1- ESS1-2) **Math**: ● MP.2- Reason abstractly and quantitatively. (1-ESS1-2)

<table>
<tr><td></td><td colspan="2">

MP.4- Model with mathematics. (1-ESS1-2)
MP.5- Use appropriate tools strategically. (1-ESS1-2)
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. (1-ESS1-2)
1.MD.C.4- Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another. (1-ESS1-2)

</td></tr>
<tr><td rowspan="2">21st Century Themes/Skills
P21 Framework</td><td>Themes</td><td>Skills</td></tr>
<tr><td>Environmental Literacy
1. Demonstrate knowledge and understanding of the environment and the circumstances and conditions affecting it, particularly as it relates to air, climate, land, food, energy, water and ecosystems.
2. Demonstrate knowledge and understanding of society’s impact on the natural world (e.g., population growth, population development, resource consumption rate, etc.).
3. Investigate and analyze environmental issues, and make accurate conclusions about effective solutions.
4. Take individual and collective action towards addressing environmental challenges (e.g., participating in global actions, designing solutions that inspire action on environmental issues).</td><td>

Responsibility and Accountability
Critical Thinking
Problem Solving
Strategic Thinking
Decision Making
Respect and Understanding

</td></tr>
<tr><td>Resources /Materials</td><td colspan="2">

Mystery Science
Brain Pop Jr.
Mystery Doug
Journals

</td></tr>
</table>

<table>
<tr><th colspan="5">Instructional Unit Map</th></tr>
<tr><td colspan="5">Course Title: First Grade Science</td></tr>
<tr><td>Unit Title</td><td colspan="2">Characteristics of Living Things</td><td>Start Date:
Length of Unit:</td><td>November
15 Instructional Days</td></tr>
<tr><td>Content Standards
What do we want them to know, understand, & do?</td><td colspan="2">● 1-LS3-1. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents</td><td>Learning Goals</td><td>● Students will be able to analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.
● Students will be able to read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.</td></tr>
<tr><td>Essential Questions</td><td colspan="4">● How are young plants and animals alike and different from their parents?
● What types (patterns) of behavior can be observed among parents that help offspring survive?</td></tr>
<tr><td rowspan="2">Assessments
How will we know they have gained the knowledge & skills?</td><td>Formative</td><td colspan="2">Summative</td><td>Alternative</td></tr>
<tr><td>● Thumbs up/thumbs down
● Interactive questioning
● Teacher observation
● Choral and individual responses to questioning
● Center work
● Checklists
● Hand Signals</td><td colspan="2">● Experiments
● Projects
● STEM Activities</td><td>● Tactile center
● Group presentation
● Visual representation of the similarities and differences</td></tr>
</table>

	● Graphic organizers ● 3-minute pause ● Student conferencing ● Exit card ● Quizzes ● Self-assessment ● Journaling ● Think-pair-share ● One question, One comment		between a parent and offspring
Unit Pre-Assessment(s) *What do they already know?*	● Interactive questioning ● Assess prior knowledge of the characteristics of living things		
Instructional Strategies/ Student Activities	● Think, pair, share ● Online media resources ● Data collection journals ● Mystery Science		

Instructional/Assessment Scaffolds *(Modifications /Accommod*	**English Language Learners**	**Special Education Learners**	**Struggling Learners**	**Advanced Learners**
	● Vocab wall ● Oral directions ● Single-step directions ● Picture directions	● Class schedule ● Oral directions w/repeating	● Chunking assignments ● Provide extra time ● Class schedule ● Timer	● Tiered Assignments ● Independent Study

ations) – planned for prior to instruction	• Classroom buddy • Immediate feedback • Quiz/Test retake	• Preferred seating • Pictures/ • graphics • Extra time • Provide examples/show work • Quiz/Test retakes • Classroom buddy • Timer	• Pictures/graphics • Provide examples • Test retakes • Show work • Classroom buddy • Small group instruction	• Flexible grouping • Opportunities for leadership • Adding technology
Differentiated Instructional Methods: *(Multiple means for students to access content and multiple modes for student to express understanding)*	**Access** (Resources and/or Process)		**Expression** (Products and/or Performance)	
	• Mini lessons/small group instruction • Learning centers • Flexible grouping • Library area: books & resources available for student exploration. • Experiments on display • Ipads (science apps)		• Choice of learning station • Choice of activity format • Presentation/Peer Sharing • Science Lessons	

Vocabulary *Highlight key vocabulary (both Tier II and Tier III words)*	Tier II: living, nonliving, parent, offspring, patterns, crying, cheeping, vocalizations, needs Tier III: observe, conclude, hypothesize, compare, contrast, explore, predict, analyze, investigate, describe, characteristics
Integration of Technology SAMR	**Substitution** ● View Videos on Brain Pop Jr. ○ Plant Life Cycle ○ Parts of a Plant ○ Trees ○ Food Chain ○ Ocean Habitats ○ Arctic Habitats ○ Freshwater Habitats ● View Mystery Science videos ○ Animal Structures & Survival ○ Animal Needs: Food ○ Animal Behavior & Offspring Survival ○ Animal Needs: Shelter ○ Camouflage & Animal Survival ○ Animal Needs: Safety ○ Plant Needs: Light ○ Plant Survival & Engineering ○ Animal Needs & Changing the Environment ● View Mystery Doug Videos ○ Could a turtle live outside its shell? ○ Why do we need blood? ○ Where do bugs go in the winter? ○ Why do bears hibernate? **Augmentation:**

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Students will take a quiz following the jr.brainpop.com videos.
Students will use an ipad to explore scientific concepts

Modification:

Seesaw program. Assignments can be differentiated according to individual level

Redefinition:

Students will give present their own patterns of the sky

</td></tr>
<tr><td>Interdisciplinary Connections
NJ Student Learning Standards</td><td colspan="2">
ELA:

RI.3.1- Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. (3-LS3-1)
RI.3.2- Determine the main idea of a text; recount the key details and explain how they support the main idea. (3-LS3-1)
RI.3.3- Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. (3-LS3-1)
W.1.7Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-LS1-1)
SL.3.4- Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (3-LS3-1)
W.3.2- Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace. (3-LS3-1)

Math:

MP.2- Reason abstractly and quantitatively. (3-LS3-1)
MP.4- Model with mathematics. (3-LS3-1)
3.MD.B.4- Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters. (3-LS3-1)

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<tr><td rowspan="2">21st Century Themes/Skills
P21 Framework</td><td>Themes</td><td>Skills</td></tr>
<tr><td>Environmental Literacy
1. Demonstrate knowledge and understanding of the environment and the circumstances and conditions affecting it, particularly as it relates to air, climate, land, food, energy, water and ecosystems.</td><td>

Responsibility and Accountability
Critical Thinking
Problem Solving
Strategic Thinking
Decision Making

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	2. Demonstrate knowledge and understanding of society's impact on the natural world (e.g., population growth, population development, resource consumption rate, etc.). 3. Investigate and analyze environmental issues, and make accurate conclusions about effective solutions. 4. Take individual and collective action towards addressing environmental challenges (e.g., participating in global actions, designing solutions that inspire action on environmental issues).	● Respect and Understanding
Resources /Materials	● Mystery Science ● Brain Pop Jr. ● Mystery Doug ● Journals	

Instructional Unit Map					
Course Title: First Grade Science					
Unit Title	Mimicking Organisms to Solve Problems			**Start Date:**	January
				Length of Unit:	25 Instructional Days
Content Standards *What do we want them to know, understand, & do?*	● 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.	**Learning Goals**	● 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. ● 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.		

	● 1-LS1-2. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.		
Essential Questions	● How can humans mimic how plants and animals use their external parts to help them survive and grow?		
Assessments *How will we know they have gained the knowledge & skills?*	**Formative**	**Summative**	**Alternative**
	● Thumbs up/thumbs down ● Interactive questioning ● Teacher observation ● Choral and individual responses to questioning ● Center work ● Checklists ● Hand Signals ● Graphic organizers ● 3-minute pause ● Student conferencing ● Exit card ● Quizzes ● Self-assessment ● Journaling ● Think-pair-share ● One question, One comment	● Experiments ● Projects ● STEM Activities	● Tactile center ● Group presentation ● 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.

<table>
<tr><td>Unit Pre-Assessment(s)
What do they already know?</td><td colspan="4">● Interactive questioning
● Assess prior knowledge of the characteristics of living things</td></tr>
<tr><td>Instructional Strategies/ Student Activities</td><td colspan="4">● Think, pair, share
● Online media resources
● Data collection journals
● Mystery Science</td></tr>
<tr><td rowspan="2">Instructional/Assessment Scaffolds
(Modifications /Accommodations) – planned for prior to instruction</td><td>English Language Learners</td><td>Special Education Learners</td><td>Struggling Learners</td><td>Advanced Learners</td></tr>
<tr><td>● Vocab wall
● Oral directions
● Single-step directions
● Picture directions
● Classroom buddy
● Immediate feedback
● Quiz/Test retake</td><td>● Class schedule
● Oral directions w/repeating
● Preferred seating
● Pictures/
● graphics
● Extra time
● Provide examples/show work
● Quiz/Test retakes
● Classroom buddy
● Timer</td><td>● Chunking assignments
● Provide extra time
● Class schedule
● Timer
● Pictures/graphics
● Provide examples
● Test retakes
● Show work
● Classroom buddy
● Small group instruction</td><td>● Tiered Assignments
● Independent Study
● Flexible grouping
● Opportunities for leadership
● Adding technology</td></tr>
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<tr><td rowspan="2">Differentiated Instructional Methods: (Multiple means for students to access content and multiple modes for student to express understanding)</td><td>Access (Resources and/or Process)</td><td>Expression (Products and/or Performance)</td></tr>
<tr><td>Mini lessons/small group instruction
Learning centers
Flexible grouping
Library area: books & resources available for student exploration.
Experiments on display
Ipads (science apps)</td><td>Choice of learning station
Choice of activity format
Presentation/Peer Sharing
Science Lessons</td></tr>
<tr><td>Vocabulary Highlight key vocabulary (both Tier II and Tier III words)</td><td colspan="2">Tier II: living, nonliving, parent, offspring, mimic, scales, phenomena, plants, survive, grow

Tier III: observe, conclude, hypothesize, compare, contrast, organisms, receptors</td></tr>
<tr><td>Integration of Technology SAMR</td><td colspan="2">Substitution
View Videos on Brain Pop Jr.
Plant Life Cycle
Camouflage
Food Chain
Classifying Animals
Hibernation
Migration
Mammals
View Mystery Science videos</td></tr>
</table>

	○ Animal Structures & Survival ○ Animal Needs: Food ○ Animal Needs: Shelter ○ Camouflage & Animal Survival ○ Animal Needs: Safety ○ Animal Needs & Changing the Environment ○ Animal Needs & Survival ● View Mystery Doug Videos ○ Why do cats purr? ○ Can animals laugh? ○ Why do owls say “hoo?” ○ How do bees make honey? ○ Why are baby animals so cute? **Augmentation:** ● Students will take a quiz following the jr.brainpop.com videos. ● Students will use an ipad to explore scientific concepts **Modification:** ● Seesaw program. Assignments can be differentiated according to individual level **Redefinition:** ● Students will give present their own patterns of the sky
Interdisciplinary Connections NJ Student Learning Standards	**ELA**: ● 1-LS1-1: Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). ● K-2-ETS1-2: Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. **Math**: ● MP.2- Reason abstractly and quantitatively. (3-LS3-1) ● MP.4- Model with mathematics. (3-LS3-1)
21st Century	**Themes** / **Skills**

Themes/Skills P21 Framework	**Environmental Literacy** 5. Demonstrate knowledge and understanding of the environment and the circumstances and conditions affecting it, particularly as it relates to air, climate, land, food, energy, water and ecosystems. 6. Demonstrate knowledge and understanding of society's impact on the natural world (e.g., population growth, population development, resource consumption rate, etc.). 7. Investigate and analyze environmental issues, and make accurate conclusions about effective solutions. 8. Take individual and collective action towards addressing environmental challenges (e.g., participating in global actions, designing solutions that inspire action on environmental issues).	• Responsibility and Accountability • Critical Thinking • Problem Solving • Strategic Thinking • Decision Making • Respect and Understanding
Resources /Materials	• Mystery Science • Brain Pop Jr. • Mystery Doug • Journals	

Instructional Unit Map					
Course Title: First Grade Science					
Unit Title	Light and Sound			**Start Date:**	March
				Length of Unit:	20 Instructional Days
Content Standards	• 1-PS4-1. Plan and conduct investigations to provide evidence that	**Learning Goals**	• Make observations to construct an evidence-based account that objects in darkness can be seen only when illuminated.		

What do we want them to know, understand, & do?	vibrating materials can make sound and that sound can make materials vibrate. ● 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.*		● Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light. ● Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.
Essential Questions	● How can you prove that you can only see something when someone shines a light on it or if the object gives off its own light? ● What happens to a beam of light when you put different kinds of things in front of it? How would you design an experiment to prove your thinking? ● How do instruments (band) make sound?		
Assessments	**Formative**	**Summative**	**Alternative**

How will we know they have gained the knowledge & skills?	• Thumbs up/thumbs down • Interactive questioning • Teacher observation • Choral and individual responses to questioning • Center work • Checklists • Hand Signals • Graphic organizers • 3-minute pause • Student conferencing • Exit card • Quizzes • Self-assessment • Journaling • Think-pair-share • One question, One comment	• Experiments • Projects • STEM Activities	• Tactile center • Group presentation • Shadow Tracing Project
Unit Pre-Assessment(s) *What do they already know?*	• Interactive questioning • Assess prior knowledge of the characteristics of living things		
Instructional Strategies/ Student Activities	• Think, pair, share • Online media resources • Data collection journals • Mystery Science		

Instructional/Assessment Scaffolds *(Modifications /Accommodations) – planned for prior to instruction*	**English Language Learners**	**Special Education Learners**	**Struggling Learners**	**Advanced Learners**
	• Vocab wall • Oral directions • Single-step directions • Picture directions • Classroom buddy • Immediate feedback • Quiz/Test retake	• Class schedule • Oral directions w/repeating • Preferred seating • Pictures/ • graphics • Extra time • Provide examples/show work • Quiz/Test retakes • Classroom buddy • Timer	• Chunking assignments • Provide extra time • Class schedule • Timer • Pictures/graphics • Provide examples • Test retakes • Show work • Classroom buddy • Small group instruction	• Tiered Assignments • Independent Study • Flexible grouping • Opportunities for leadership • Adding technology
Differentiated Instructional Methods: *(Multiple means for students to access content and multiple modes for student to*	**Access** (Resources and/or Process)		**Expression** (Products and/or Performance)	
	• Mini lessons/small group instruction • Learning centers • Flexible grouping • Library area: books & resources available for student exploration. • Experiments on display • Ipads (science apps)		• Choice of learning station • Choice of activity format • Presentation/Peer Sharing • Science Lessons	

express understanding)		
Vocabulary *Highlight key vocabulary (both Tier II and Tier III words)*	Tier II: light, sound, vibration, shadow, beam, path, echo, Tier III: observe, conclude, hypothesize, compare, contrast, evidence, illuminate, investigate, construct	
Integration of Technology SAMR	**Substitution** ● View Videos on Brain Pop Jr. ○ Light ○ Sun ○ Colors ○ Senses ○ Sound ○ Solar System ○ Earth ● View Mystery Science videos ○ Sounds and Vibrations ○ Light and Illumination ○ Light, Communication, and Engineering ○ Light, Eyes and Vision ○ Light and Color ○ Light, Materials and Color ● View Mystery Doug Videos ○ What causes the Northern Lights? ○ How do things glow in the dark? **Augmentation:** ● Students will take a quiz following the jr.brainpop.com videos. ● Students will use an ipad to explore scientific concepts	

<table>
<tr><td></td><td colspan="2">Modification:
● Seesaw program. Assignments can be differentiated according to individual level

Redefinition:
● Students will give present their own patterns of the sky</td></tr>
<tr><td>Interdisciplinary Connections
NJ Student Learning Standards</td><td colspan="2">ELA:
● W.1.2 Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure. (1-PS4-2)
● W.1.7 Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-PS4-1),(1-PS4-2),(1-PS4-3)
● W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-PS4-1),(1- PS4-2),(1-PS4-3)
● 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. (1-PS4-1),(1- PS4-2),(1-PS4-3)
Math:
● MP.4- Model with mathematics. (3-LS3-1)</td></tr>
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P21 Framework</td><td>Themes</td><td>Skills</td></tr>
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10. Demonstrate knowledge and understanding of society’s impact on the natural world (e.g., population growth, population development, resource consumption rate, etc.).
11. Investigate and analyze environmental issues, and make accurate conclusions about effective solutions.
12. Take individual and collective action towards addressing environmental challenges (e.g.,</td><td>● Responsibility and Accountability
● Critical Thinking
● Problem Solving
● Strategic Thinking
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● Respect and Understanding</td></tr>
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	participating in global actions, designing solutions that inspire action on environmental issues).	
Resources /Materials	● Mystery Science ● Brain Pop Jr. ● Mystery Doug ● Journals	

Instructional Unit Map					
Course Title: First Grade Science					
Unit Title	Communicating with Light and Sound			**Start Date:**	May
				Length of Unit:	25 Instructional Days
Content Standards *What do we want them to know, understand, & do?*	● 1-PS4-1. Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. ● 1-PS4-2. Make observations to construct an evidence-based account that objects can be seen only when illuminated.	**Learning Goals**	● Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance. ● 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. ● 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.		

	• 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.*		
Essential Questions	• How can light or sound be used to communicate over a distance?		

Assessments *How will we know they have gained the knowledge & skills?*	**Formative**	**Summative**	**Alternative**
	• Thumbs up/thumbs down • Interactive questioning • Teacher observation • Choral and individual responses to questioning • Center work • Checklists • Hand Signals • Graphic organizers • 3-minute pause • Student conferencing • Exit card • Quizzes • Self-assessment	• Experiments • Projects • STEM Activities	• Tactile center • Group presentation • Shadow Puppet Show

	● Journaling ● Think-pair-share ● One question, One comment			
Unit Pre-Assessment(s) *What do they already know?*	● Interactive questioning ● Assess prior knowledge of the characteristics of living things			
Instructional Strategies/ Student Activities	● Think, pair, share ● Online media resources ● Data collection journals ● Mystery Science			
Instructional/Assessment Scaffolds *(Modifications /Accommodations) – planned for prior to instruction*	**English Language Learners**	**Special Education Learners**	**Struggling Learners**	**Advanced Learners**
	● Vocab wall ● Oral directions ● Single-step directions ● Picture directions ● Classroom buddy ● Immediate feedback ● Quiz/Test retake	● Class schedule ● Oral directions w/repeating ● Preferred seating ● Pictures/ ● graphics ● Extra time	● Chunking assignments ● Provide extra time ● Class schedule ● Timer ● Pictures/graphics ● Provide examples ● Test retakes ● Show work ● Classroom buddy ● Small group instruction	● Tiered Assignments ● Independent Study ● Flexible grouping ● Opportunities for leadership

		• Provide examples/show work • Quiz/Test retakes • Classroom buddy • Timer		• Adding technology
Differentiated Instructional Methods: *(Multiple means for students to access content and multiple modes for student to express understanding)*	**Access** (Resources and/or Process)		**Expression** (Products and/or Performance)	
	• Mini lessons/small group instruction • Learning centers • Flexible grouping • Library area: books & resources available for student exploration. • Experiments on display • Ipads (science apps)		• Choice of learning station • Choice of activity format • Presentation/Peer Sharing • Science Lessons	
Vocabulary *Highlight key vocabulary (both Tier II and Tier III words)*	Tier II: light, sound, vibration, shadow, beam, path, echo, communication, speaking, listening, distance, stability, develop Tier III: observe, conclude, hypothesize, compare, contrast, evidence, illuminate, investigate, construct			

Integration of Technology SAMR	**Substitution** ● View Videos on Brain Pop Jr. ○ Light ○ Sound ○ Listening & Speaking ○ Conflict Resolution ● View Mystery Science videos ○ Light, Communication, and Engineering ○ Lights, Sounds, & Communication ● View Mystery Doug Videos ○ Can animals laugh? ○ Why do people from England sound different than people from America? ○ What causes the Northern Lights? ○ How do things glow in the dark? **Augmentation:** ● Students will take a quiz following the jr.brainpop.com videos. ● Students will use an ipad to explore scientific concepts **Modification:** ● Seesaw program. Assignments can be differentiated according to individual level **Redefinition:** ● Students will give present their own patterns of the sky
Interdisciplinary Connections NJ Student Learning Standards	**ELA**: ● W.1.7 Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-PS4-4) ● RI.2.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text. (K-2-ETS1-1) ● W.2.6 With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. (K-2-ETS1-1) ● W.2.8 Recall information from experiences or gather information from provided sources to answer a question. (K-2-ETS1-1)

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SL.2.5 Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. (K-2-ETS1-2)

Math:

MP.2 Reason abstractly and quantitatively. (K-2-ETS1-1)
MP.4 Model with mathematics. (K-2-ETS1-1)
MP.5 Use appropriate tools strategically. (1-PS4-4),(K-2-ETS1-1)
1.MD.A.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object. (1-PS4-4)
1.MD.A.2 Express the length of an object as a whole number of length units, by layering multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps. (1-PS4-4)
2.MD.D.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. (K-2-ETS1-1)

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