Quinton Township School District
Science
Grade 1
Pacing Guide

Unit	1	**Unit Title:**	Patterns of Change in the Sky	**Pacing:**	20 Days
Unit Summary: In this unit of study, students observe, describe, and predict some patterns in the movement of objects in the sky. The crosscutting concept of *patterns* is called out as an organizing concept for the disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in *planning and carrying out investigations* and *analyzing and interpreting data*. Students are also expected to use these practices to demonstrate understanding of the core ideas.					
Essential Questions: 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?					
Objectives: ● Describe the sun. ● Describe how day and night make a pattern. ● Describe the pattern of the sun's apparent motion in the sky. ● Observe the pattern of the sun in the sky. ● Predict the future pattern of the sun in the sky. ● Describe the sun when the moon is visible. ● Describe the pattern of the moon in the sky. ● Describe when you can observe the stars. ● Predict the future pattern of the moon in the sky. ● Describe why you can see stars only at night.					

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- Describe how people use stars to make a pattern.
- Explain how people use star patterns.
- Describe the Little Dipper and the location of the North Star.
- Explain how the Little Dipper appears to move in the night sky.
- Describe Alkaid's pattern of motion.
- Describe how Cepheus appears to move.
- Describe how the North Star appears to move.
- Describe the pattern of the seasons.
- Conclude that each season happens once each year.
- Explain how daylight changes with the seasons.
- Predict how sunrise and sunset will change from one day to the next.
- Observe and record when sunrise and sunset occur at different times of the year.
- Compare data to relate the amount of daylight to the time of year.
- Connect the concept of patterns of motion of the sun, moon, stars, and planets with the career of an astronomer.

NJSLS-Science Standards: 1-ESS1-1 and 1-ESS1-2

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Planning and Carrying Out Investigations Plan and conduct investigations collaboratively to produce evidence to answer a question. **Planning and Carrying Out Investigations** Make observations (firsthand or from media) to collect data that can be used to make comparisons.	**The Universe and its Stars** Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted. **Earth and the Solar System** Seasonal patterns of sunrise and sunset can be observed, described, and predicted.	**Patterns** Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. **Connections to Nature of Science** **Scientific Knowledge Assumes an Order and Consistency in Natural Systems**

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Analyzing and Interpreting Data Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions.		Science assumes natural events happen today as they happened in the past. Many events are repeated.

Interdisciplinary Connections: W.WR.1.5, W.SE.1.6, SL.PE.1.1, 1.DL.A.1, 6.1.2.CivicsPD.1

Career Readiness, Life Literacies, and Key Skills: 9.1.2.CR.2, 9.4.2.CT.1, 9.4.2.CT.2, 9.4.2.CT.3

Computer Science and Design Thinking: 9.4.2.DC.7, 8.1.2.DA.1, 8.1.2.DA.3

Career Education: 9.2.2.CAP.1, 9.2.2.CAP.3

Overview of Activity/Focus	Instructional Materials	Technology Infusion
• Using firsthand observations and media resources, explore and collect data about the sun, moon, and stars to describe apparent patterns of change in each. • When shown a picture or video of the sun, moon, or stars, describe the patterns and to make predictions about the changes that occur in the objects in the sky. • Watch videos about seasonal patterns of sunrise and sunset and relate those to the amount of daylight found in specific times of year by making observations at different times of the year. • Through text and multimedia resources, learn about some major constellations and create drawings to represent stars.	**Core Materials** *National Geographic Science* **Supplemental Resources** Mystery Science Little Science Thinkers PBS Learning Media NatGeo Science Book: Starry Sky Text: The Sun	Smart Board Applications Google Applications Chromebooks Gizmo IXL

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Assessments	
Formative Assessments ● Class Discussions ● Self Assessment ● Science Investigation Data Collection	**Summative Assessments** ● Drawings of Constellations ● Post-investigation Oral Assessments ● Final Project
Benchmark Assessments ● District-assigned Benchmark Assessments (e.g. LinkIt, content-specific benchmarks)	**Alternative Assessments** ● Alternative Choice Projects ● Oral Assessments

Differentiation			
Special Education	**MLL**	**At Risk**	**Gifted and Talented**
● Modify and accommodate as listed in student IEP or 504 plan. ● Communicate clear, concise directions and repeat, reword, modify as necessary. ● Use visual aids in lessons. ● Utilize extended time and/or reduce item number for homework and tests. ● Vary formative assessment styles to drive next point of instruction. ● Create modified assessments. ● Allow students to utilize online audio books, when appropriate. ● Allow for collaboration through strategically selected groups. ● Utilize assistive technology	● Basic Skills Instruction ● Speech/Language Therapy ● Rosetta Stone ● Provide English/Native Language Dictionary for use. ● Place with native-language-speaking teacher/paraprofessional as available. ● Use target words and cognates to understand texts. ● Remind students to underline passages and list words they don't understand. ● Learn/Utilize/Display some words in the students' native language. ● Provide and model sentence frames to help students participate in discussion. ● Provide word banks to help students write.	● Basic Skills Instruction ● Provide after-school tutoring services. ● Hold fall and spring parent conferences. ● Make modifications to instructional plans based on I and RS Plan. ● Utilize wait time effectively. ● Develop a record system to encourage good behavior and completion of work. ● Utilize scaffolding to support instruction. ● Provide counseling if necessary to help students cope with challenges. ● Utilize strategic grouping with a positive academic role model. ● Utilize graphic organizers.	● Allow self-directed learning for growth though independent projects. ● Challenge students with age-appropriate texts at higher reading levels. ● Allow for the development and application of productive thinking skills to enable students to re-conceptualize existing knowledge and/or generate new knowledge. ● Provide for the development of self-understanding of one's relationships with people, societal institutions, nature and culture.

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as appropriate. • Utilize graphic organizers. • Provide and model sentence frames/sentence starters. • Utilize manipulatives as necessary. • Provide breaks to allow for refocusing as necessary.	• Translate printed communications in native language for parents. • Hold conferences with translator present.		

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Quinton Township School District
Science
Grade 1

Unit	2	**Unit Title:**	Characteristics of Living Things	**Pacing:**	21 Days

Unit Summary: In this unit of study, students develop an understanding of how plants and animals use their external parts to help them survive, grow, and meet their needs, as well as how the behaviors of parents and offspring help offspring survive. The understanding that young plants and animals are like, but not exactly the same as, their parents is developed. The crosscutting concept of *patterns* is called out as an organizing concept for the disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in *obtaining, evaluating, and communicating information* and *constructing explanations*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Essential Questions:
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?

Objectives:
- Identify plants as living things.
- Know that plans have different parts that help them survive.
- Identify the parts of plants.
- Explain how roots, stems, and leaves help plants survive and grow.
- Identify flowers and fruits as parts of many plants.
- Explain how flowers and fruits help these plants survive and grow.
- Observe and describe how a plant responds to light.
- Observe and describe how the roots of a plant respond to gravity.
- Identify that adult plants can make new, young plants.
- Describe the stages of a tomato plant's life cycle.

- Identify that plants are very much, but not exactly like their parents.
- Observe that plants of the same kind are similar, but can also vary in many ways.
- Make and record observations to show that young plants are like, but not exactly like, their parents.
- Use evidence from their observations to explain that young plants are like, but not exactly like, their parents.
- Connect concepts about animals and how they survive with the career of a conservationist.

NJSLS-Science Standards: 1-PS4-1, 1-PS4-2, 1-PS4-3, 1-PS4-4

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Analyzing and Interpreting Data Analyze and interpret data to make sense of phenomena using logical reasoning. **Obtaining, Evaluating, and Communicating Information** Read grade-appropriate texts and use media to obtain scientific information to determine patterns in the natural world.	**Inheritance of Traits** Many characteristics of organisms are inherited from their parents. **Growth and Development of Organisms** Adult plants and animals can have young. In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring to survive.	**Patterns** Similarities and differences in patterns can be used to sort and classify natural phenomena. Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence **Connections to Nature of Science** **Scientific Knowledge is Based on Empirical Evidence** Scientists look for patterns and order when making observations about the world.

Interdisciplinary Connections: W.WR.1.5, W.SE.1.6, SL.PE.1.1, 1.DL.A.1, 6.1.2.CivicsPD.1

Career Readiness, Life Literacies, and Key Skills: 9.1.2.CR.2, 9.4.2.CT.1, 9.4.2.CT.2, 9.4.2.CT.3

Computer Science and Design Thinking: 9.4.2.DC.7, 8.1.2.DA.1, 8.1.2.DA.3

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Career Education: 9.2.2.CAP.1, 9.2.2.CAP.3		
Overview of Activity/Focus	**Instructional Materials**	**Technology Infusion**
• Read informational texts and stories about plant growth and plant life cycles. • Observe several different types of plants to determine their external features, noting how leaves of one plant are all similar. • Through nature walks examine the leaves of different tree species and make rubbings of leaves. Discuss how leaves of a species are similar in shape. • Conduct an investigation such as Eat Like a Bird to determine how different birds' beaks support their growth.	**Core Materials** *National Geographic Science* **Supplemental Resources** Mystery Science videos & activities Little Science Thinkers PBS Learning Media NatGeo Science Investigation: What Color is Your Leaf?	Smart Board Applications Google Applications Chromebooks Gizmo IXL

Assessments	
Formative Assessments • Class Discussions • Plant and Animal Investigation Data • Exit Tickets • Journal Responses	**Summative Assessments** • Investigation Projects • Post-investigation Oral Assessments • Unit Assessment
Benchmark Assessments • District-assigned Benchmark Assessments (e.g. LinkIt, content-specific benchmarks)	**Alternative Assessments** • Alternative Choice Projects • Oral Assessments
Differentiation	

Special Education	MLL	At Risk	Gifted and Talented
• Modify and accommodate as listed in student IEP or 504 plan. • Utilize wait time effectively. • Communicate clear, concise directions and repeat, reword, modify as necessary. • Use visual aids during lessons and small-group time. • Utilize open-ended questioning techniques. • Utilize extended time and/or reduce number of items given for homework, quizzes, and tests. • Vary formative assessment styles to drive next point of instruction. • Create modified assessments. • Allow students to utilize online audio books, when appropriate. • Allow for collaboration through strategically selected groups. • Utilize assistive technology as appropriate. • Utilize graphic organizers. • Provide and model sentence frames/sentence starters. • Utilize manipulatives as necessary. • Provide breaks to allow for refocusing as necessary.	• Basic Skills Instruction • Speech/Language Therapy • Rosetta Stone • Provide English/Native Language Dictionary for use. • Place with native-language-speaking teacher/paraprofessional as available. • Use target words and cognates to understand texts. • Remind students to underline passages and list words they don't understand. • Learn/Utilize/Display some words in the students' native language. • Provide and model sentence frames to help students participate in discussion. • Provide word banks to help students write. • Translate printed communications in native language for parents. • Hold conferences with translator present.	• Basic Skills Instruction • Provide after-school tutoring services. • Hold fall and spring parent conferences. • Make modifications to instructional plans based on I and RS Plan. • Utilize wait time effectively. • Develop a record system to encourage good behavior and completion of work. • Utilize scaffolding to support instruction. • Provide counseling if necessary to help students cope with challenges. • Utilize strategic grouping with a positive academic role model. • Utilize graphic organizers.	• self-directed learning for growth though independent projects. • Challenge students with age-appropriate texts at higher reading levels. • Allow for the development and application of productive thinking skills to enable students to re-conceptualize existing knowledge and/or generate new knowledge. • Provide for the development of self-understanding of one's relationships with people, societal institutions, nature and culture.

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Quinton Township School District
Science
Grade 1

Unit	3	Unit Title:	Mimicking Organisms to Solve Problems	Pacing:	24 Days

Unit Summary: In this unit of study, students develop an understanding of how plants and animals use their parts to help them survive, grow, and meet their needs. Students also need opportunities to develop possible solutions. As students develop possible solutions, one challenge will be to keep them from immediately implementing the first solution they think of and to instead think through the problem carefully before acting. Having students sketch their ideas or make a physical model is a good way to engage them in shaping their ideas to meet the requirements of the problem. The crosscutting concept of *structure and function* is called out as an organizing concept for the disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in constructing explanations, designing solutions, and in developing and using models. Students are expected to use these practices to demonstrate understanding of the core ideas.

Essential Questions:
How can humans mimic how plants and animals use their external parts to help them survive and grow?

Objectives:
- Explain how different animals use their body parts in different ways.
- Identify the different body parts of animals that help them survive and grow.
- Explain that animals use their body parts in different ways to see and hear and to grasp objects.
- Explain that animals use their body parts in different ways to protect themselves, to move from place to place, to seek and find food, and to take in food, water, and air.
- Describe how animals capture and convey different kinds of information needed for growth and survival.
- Identify animals' responses to these inputs with behaviors that help them survive.
- Describe how engineers design solutions to a human problem by mimicking how animals use their external parts to help

them survive, grow, and meet their needs.
- Use materials to design a solution to a human problem by mimicking how animals use their external parts to help them survive.
- Explain that some young animals make noises to let their parents know they need something.
- Describe how some animal parents and their offspring engage in behaviors that help the offspring survive.
- Explain that many young animals need help to stay warm, to move from place to place, and to be protected.
- Describe how some young animals learn how to survive from their parents.
- Determine patterns in the behavior of parents and offspring that help offspring survive.
- Observe that young animals are very much, but not exactly, like their parents.
- Recognize that individuals of the same type of animals are similar, but can also vary in many ways.
- Plan and conduct an investigation in order to make and record observations to show that young animals are like, but not exactly like their parents.
- Connect concepts about the animals and how they survive with the career of a conservationist.

NJSLS-Science Standards: 1-LS1-1 and K-2-ETS1-2

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Analyzing and Interpreting Data Analyze and interpret data to make sense of phenomena using logical reasoning. **Constructing Explanations and Designing Solutions** Use materials to design a device that solves a specific problem or a solution to a specific problem. **Developing and Using Models**	**Structure and Function** All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow. **Growth and Development of Organisms**	**Structure and Function** The shape and stability of structures of natural and designed objects are related to their function(s). --- **Connections to Engineering, Technology, and Applications of Science** **Influence of Science, Engineering and Technology on Society and the Natural World**

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Develop a simple model based on evidence to represent a proposed object or tool.	Adult plants and animals can have young. In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring to survive. **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. **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.	Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world

Interdisciplinary Connections: W.WR.1.5, W.SE.1.6, SL.PE.1.1, 1.DL.A.1, 6.1.2.CivicsPD.1

Career Readiness, Life Literacies, and Key Skills: 9.1.2.CR.2, 9.4.2.CT.1, 9.4.2.CT.2, 9.4.2.CT.3

Computer Science and Design Thinking: 9.4.2.DC.7, 8.1.2.DA.1, 8.1.2.DA.3

Career Education: 9.2.2.CAP.1, 9.2.2.CAP.3

Overview of Activity/Focus	Instructional Materials	Technology Infusion

- Make direct observations and use media resources to find relevant examples for plants and animals using 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. - Gather data on how animals have body parts that capture and convey different kinds of information from the - environment, enabling them to respond to these inputs in ways that aid in survival. - Create a model mimicking how plants and/or animals use their external parts to help them survive and grow. - As a class or in small groups, esearch to find examples of human-made products that have been designed and built by applying knowledge of the natural world. - Brainstorm possible human problems that can be solved by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs. - In small groups, sketch, draw, or make physical models to convey a design that solves a problem by mimicking one or more external structures of plants and/or animals. - Share the design solution with others in the class.	**Core Materials** *National Geographic Science* **Supplemental Resources** Mystery Science videos & activities Little Science Thinkers PBS Learning Media NatGeo Science Investigation: Eat Like a Bird	Smart Board Applications Google Applications Chromebooks Gizmo IXL

Assessments	
Formative Assessments - Class Discussions - Recorded Observations - Research Notes	**Summative Assessments** - Design Solutions - Unit Assessment

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- Exit Tickets - Journal Responses	
Benchmark Assessments District-assigned Benchmark Assessments (e.g. LinkIt, content-specific benchmarks)	**Alternative Assessments** - Alternative Choice Projects - Oral Assessments

Differentiation			
Special Education	**MLL**	**At Risk**	**Gifted and Talented**
- Modify and accommodate as listed in student IEP or 504 plan. - Communicate clear, concise directions and repeat, reword, modify as necessary. - Use visual aids in instruction. - Utilize extended time and/or reduce number of items given for homework, quizzes, and tests. - Vary formative assessment styles to drive next point of instruction. - Create modified assessments. - Allow students to utilize online audio books, when appropriate. - Utilize assistive technology as appropriate. - Utilize graphic organizers. - Provide and model sentence frames/sentence starters. - Utilize manipulatives as necessary. - Provide breaks to allow for refocusing as necessary.	- Basic Skills Instruction - Speech/Language Therapy - Rosetta Stone - Provide English/Native Language Dictionary for use. - Place with native-language-speaking teacher/paraprofessional as available. - Use target words and cognates to understand texts. - Remind students to underline passages and list words they don't understand. - Learn/Utilize/Display some words in the students' native language. - Provide and model sentence frames to help students participate in discussion. - Provide word banks to help students write. - Translate printed communications in native language for parents. - Hold conferences with translator present.	- Basic Skills Instruction - Provide after-school tutoring services. - Hold fall and spring parent conferences. - Make modifications to instructional plans based on I and RS Plan. - Utilize wait time effectively. - Develop a record system to encourage good behavior and completion of work. - Utilize scaffolding to support instruction. - Provide counseling if necessary to help students cope with challenges. - Utilize strategic grouping with a positive academic role model. - Utilize graphic organizers.	- self-directed learning for growth though independent projects. - Challenge students with age-appropriate texts at higher reading levels. - Allow for the development and application of productive thinking skills to enable students to re-conceptualize existing knowledge and/or generate new knowledge. - Provide for the development of self-understanding of one's relationships with people, societal institutions, nature and culture.

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Quinton Township School District
Science
Grade 1

Unit	4	Unit Title:	Light and Sound	Pacing:	10 Days

Unit Summary: In this unit of study, students develop an understanding of the relationship between sound and vibrating materials as well as between the availability of light and the ability to see objects. The idea that light travels from place to place can be understood by students at this level by placing objects made with different materials in the path of a beam of light and determining the effect of the different materials. The crosscutting concept of *cause and effect* is called out as an organizing concept for the disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in *planning and carrying out investigations*, *constructing explanations*, and *designing solutions*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Essential Questions:
How do instruments make sound?
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?

Objectives:
- Explain that vibrating matter can make sound.
- Demonstrate that vibrating matter can make sound.
- Work with a partner to plan and conduct an investigation to provide evidence that vibrating materials make sound.
- Use evidence from their investigation to explain results to others.
- Explain that sound can make matter vibrate.
- Demonstrate that sound can make matter vibrate.
- Work with a partner to plan and conduct an investigation to provide evidence that vibrating materials make sound.
- Use evidence from their investigation to explain results to others.
- Explain how light enables us to see.

NJSLS-Science Standards: 1-PS4-1 and 1-PS4-4

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Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Planning and Carrying Out Investigations Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions. Plan and conduct investigations collaboratively to produce data to serve as the basis for evidence to answer a question. **Constructing Explanations and Designing Solutions** Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions. Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. Use tools and materials provided to design a device that solves a specific problem.	**Wave Properties** Sound can make matter vibrate, and vibrating matter can make sound. **Electromagnetic Radiation** Objects can be seen if light is available to illuminate them or if they give off their own light. 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. **Information Technologies and Instrumentation** People also use a variety of devices to communicate (send and receive information) over long distances.	**Cause and Effect** Simple tests can be designed to gather evidence to support or refute student ideas about causes. **Connections to Engineering, Technology, and Applications of Science** **Influence of Engineering, Technology, and Science, on Society and the Natural World** People depend on various technologies in their lives; human life would be very different without technology.

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<table>
<tr><td colspan="3">Interdisciplinary Connections: W.WR.1.5, W.SE.1.6, SL.PE.1.1, 1.DL.A.1, 6.1.2.CivicsPD.1</td></tr>
<tr><td colspan="3">Career Readiness, Life Literacies, and Key Skills: 9.1.2.CR.2, 9.4.2.CT.1, 9.4.2.CT.2, 9.4.2.CT.3</td></tr>
<tr><td colspan="3">Computer Science and Design Thinking: 9.4.2.DC.7, 8.1.2.DA.1, 8.1.2.DA.3</td></tr>
<tr><td colspan="3">Career Education: 9.2.2.CAP.1, 9.2.2.CAP.3</td></tr>
<tr><th>Overview of Activity/Focus</th><th>Instructional Materials</th><th>Technology Infusion</th></tr>
<tr><td>● Watch videos of cave explorers deep in the earth, using light from a single flashlight.
● Conduct simple investigations to determine what happens to a beam of light when objects made of various materials (transparent, translucent, opaque) are placed in its path.
● Using a variety of objects and materials, observe that vibrating materials can make sound and that sound can make materials vibrate.</td><td>Core Materials
National Geographic Science

Supplemental Resources
Mystery Science videos & activities
Little Science Thinkers
PBS Learning Media
NatGeo Science</td><td>Smart Board Applications
Google Applications
Chromebooks
Gizmo
IXL</td></tr>
<tr><th colspan="3">Assessments</th></tr>
<tr><td>Formative Assessments
● Class Discussions
● Recorded Observations of Sound and Light
● Exit Tickets
● Journal Responses</td><td colspan="2">Summative Assessments
● Post-investigation Oral Assessments
● Unit Assessment</td></tr>
<tr><td>Benchmark Assessments
● District-assigned Benchmark Assessments (e.g. LinkIt, content-specific benchmarks)</td><td colspan="2">Alternative Assessments
● Alternative Choice Projects
● Oral Assessments</td></tr>
</table>

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Differentiation			
Special Education	**MLL**	**At Risk**	**Gifted and Talented**
• Modify and accommodate as listed in student IEP or 504 plan. • Communicate clear, concise directions and repeat, reword, modify as necessary. • Use visual aids in instruction. • Utilize extended time and/or reduce number of items given for homework, quizzes, and tests. • Vary formative assessment styles to drive next point of instruction. • Create modified assessments. • Allow students to utilize online audio books, when appropriate. • Allow for collaboration through strategically selected groups. • Utilize assistive technology as appropriate. • Utilize graphic organizers. • Provide and model sentence frames/sentence starters. • Utilize manipulatives as necessary. • Provide breaks to allow for refocusing as necessary.	• Basic Skills Instruction • Speech/Language Therapy • Rosetta Stone • Provide English/Native Language Dictionary for use. • Place with native-language-speaking teacher/paraprofessional as available. • Use target words and cognates to understand texts. • Remind students to underline passages and list words they don't understand. • Learn/Utilize/Display some words in the students' native language. • Provide and model sentence frames to help students participate in discussion. • Provide word banks to help students write. • Translate printed communications in native language for parents. • Hold conferences with translator present.	• Basic Skills Instruction • Provide after-school tutoring services. • Hold fall and spring parent conferences. • Make modifications to instructional plans based on I and RS Plan. • Utilize wait time effectively. • Develop a record system to encourage good behavior and completion of work. • Utilize scaffolding to support instruction. • Provide counseling if necessary to help students cope with challenges. • Utilize strategic grouping with a positive academic role model. • Utilize graphic organizers.	• self-directed learning for growth though independent projects. • Challenge students with age-appropriate texts at higher reading levels. • Allow for the development and application of productive thinking skills to enable students to re-conceptualize existing knowledge and/or generate new knowledge. • Provide for the development of self-understanding of one's relationships with people, societal institutions, nature and culture.

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Quinton Township School District
Science
Grade 1

Unit	5	Unit Title:	Communicating with Light and Sound	Pacing:	15 Days
Unit Summary: In this unit of study, students continue to develop their understanding of the relationship between sound and vibrating materials as well as between the availability of light and the ability to see objects. Students apply their knowledge of light and sound to engage in engineering design to solve a simple problem involving communication with light and sound. The crosscutting concepts of *structure and function* and *influence of engineering, technology, and science on society and the natural world* are called out as organizing concepts for the disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in constructing explanations and designing solutions, asking questions and defining problems, and developing and using models. Students are also expected to use these practices to demonstrate understanding of the core ideas.					
Essential Questions: How would we communicate over a distance without the use of any of the devices that people currently use?					
Objectives: ● Identify that light makes it possible to see objects. ● Classify the sun as an object that gives off its own light. ● Recognize that objects that give off light can be used to help us see. ● Observe evidence that objects can be seen only where there is light. ● Use their observations to construct an evidence-based account that objects can be seen only when illuminated. ● Define clear as the ability of a material to allow light to pass through it. ● Classify some materials as clear. ● Describe materials that allow only some light to pass through them and materials that block all light. ● Define shadow.					

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- Describe how some materials redirect a beam of light.
- Work with a group to plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.
- Describe how people communicate.
- Identify devices that enable people to communicate over long distances.
- Observe and record evidence that information can be communicated using devices.
- Used tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.
- Test and revise the prototype device based on results and feedback.
- Use the device to explain how people can use sound or light to communicate.
- Relate a photographer's job to the science of light.

NJSLS-Science Standards: 1-PS4-1, 1-PS4-2, 1-PS4-3, 1-PS4-4, 2-ESS1-1, 2-ESS2-1, K-2-ETS1-1, and K-2-ETS1-2

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Planning and Carrying Out Investigations Planning and carrying out investigations to answer questions or test solutions to problems in K–2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions. Plan and conduct investigations collaboratively to produce data to serve as the basis for evidence to answer a question. **Constructing Explanations and Designing Solutions** Constructing explanations and designing solutions in K–2 builds on prior experiences	**Wave Properties** Sound can make matter vibrate, and vibrating matter can make sound. **Electromagnetic Radiation** Objects can be seen if light is available to illuminate them or if they give off their own light. Some materials allow light to pass through them, others allow only some light through and others block all the light and create a dark shadow on any surface beyond them, where the light cannot reach. Mirrors can be used to redirect a light beam. (Boundary: The idea	**Cause and Effect** Simple tests can be designed to gather evidence to support or refute student ideas about causes. **Influence of Engineering, Technology, and Science on Society and the Natural World** People depend on various technologies in their lives; human life would be very different without technology.

and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions. Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. Use tools and materials provided to design a device that solves a specific problem.	that light travels from place to place is developed through experiences with light sources, mirrors, and shadows, but no attempt is made to discuss the speed of light.) **Information Technologies and Instrumentation** People also use a variety of devices to communicate (send and receive information) over long distances.	

Interdisciplinary Connections: W.WR.1.5, W.SE.1.6, SL.PE.1.1, 1.DL.A.1, 6.1.2.CivicsPD.1

Career Readiness, Life Literacies, and Key Skills: 9.1.2.CR.2, 9.4.2.CT.1, 9.4.2.CT.2, 9.4.2.CT.3

Computer Science and Design Thinking: 9.4.2.DC.7, 8.1.2.DA.1, 8.1.2.DA.3

Career Education: 9.2.2.CAP.1, 9.2.2.CAP.3

Overview of Activity/Focus	Instructional Materials	Technology Infusion
• Brainstorm a list of ways that people communicate over a distance. • Engage in a research and design process to design and build a device that allows us to communicate over a distance. • In a class discussion, determine the criteria that will be used to evaluate the design solutions. One criterion MUST be that the device uses either light or sound. • Also as a class, determine possible constraints, such as available materials and amount of time allotted for	**Core Materials** *National Geographic Science* **Supplemental Resources** Mystery Science videos & activities Little Science Thinkers PBS Learning Media NatGeo Science	Smart Board Applications Google Applications Chromebooks Gizmo IXL

designing and building the device. ● In a small group, conduct research, looking for examples of devices that use light or sound to communicate over a distance and use tools and materials to design and build their devices. ● Prepare a sketch or drawing of their device, carefully labeling the components and describing, in writing, how each component relates to the device's function. ● Present devices to the class, demonstrating how they work. ● Determine which devices work as intended based on the criteria, using data as evidence to support their thinking.		

Assessments	
Formative Assessments ● Class Discussions ● Recorded Research ● Design Drafts ● Exit Tickets ● Journal Responses	**Summative Assessments** ● Presentations ● Post-investigation Oral Assessments ● Unit Assessment
Benchmark Assessments ● District-assigned Benchmark Assessments (e.g. LinkIt, content-specific benchmarks)	**Alternative Assessments** ● Alternative Choice Projects ● Oral Assessments

Differentiation			
Special Education	**MLL**	**At Risk**	**Gifted and Talented**
● **Modify and accommodate as**	● **Basic Skills Instruction**	● **Basic Skills Instruction**	● **self-directed learning for**

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listed in student IEP or 504 plan. • Communicate clear, concise directions and repeat, reword, modify as necessary. • Use visual aids in instruction. • Utilize extended time and/or reduce number of items given for homework, quizzes, and tests. • Vary formative assessment styles to drive next point of instruction. • Create modified assessments. • Allow students to utilize online audio books, when appropriate. • Allow for collaboration through strategically selected groups. • Utilize assistive technology as appropriate. • Utilize graphic organizers. • Provide and model sentence frames/sentence starters. • Utilize manipulatives as necessary. • Provide breaks to allow for refocusing as necessary.	• Speech/Language Therapy • Rosetta Stone • Provide English/Native Language Dictionary for use. • Place with native-language-speaking teacher/paraprofessional as available. • Use target words and cognates to understand texts. • Remind students to underline passages and list words they don't understand. • Learn/Utilize/Display some words in the students' native language. • Provide and model sentence frames to help students participate in discussion. • Provide word banks to help students write. • Translate printed communications in native language for parents. • Hold conferences with translator present.	• Provide after-school tutoring services. • Hold fall and spring parent conferences. • Make modifications to instructional plans based on I and RS Plan. • Utilize wait time effectively. • Develop a record system to encourage good behavior and completion of work. • Utilize scaffolding to support instruction. • Provide counseling if necessary to help students cope with challenges. • Utilize strategic grouping with a positive academic role model. • Utilize graphic organizers.	growth though independent projects. • Challenge students with age-appropriate texts at higher reading levels. • Allow for the development and application of productive thinking skills to enable students to re-conceptualize existing knowledge and/or generate new knowledge. • Provide for the development of self-understanding of one's relationships with people, societal institutions, nature and culture.

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