

Subject Area: Science

Grade Level: 1

Unit 1: Plant and Animal Parts

Dates: September - November (Rotate with Social Studies Unit)

Time Frame: 12 weeks

Overview

In this unit, students are introduced to the anchoring phenomenon of animals taking care of their young. Students will examine and compare the similarities and differences between animals and plants. Students discover different animal families on a fictional safari. Students investigate how plants and animals are like others of the same kind, how plants and animals sense things, and how plants and animals meet their needs. Students will be able to explain how offspring are like, but not exactly like, their parents. Students will also understand how plants and animals stay safe and read about how parents take care of their offspring. Then students lead a safari in their neighborhood. Using what they know, how can students design a device to carry and protect their items while on a safari?

Essential Questions

- How are plants and animals like others of the same kind?
- How are plants and animals like their parents?
- What different parts do plants have?
- What different parts do animals have?
- How do plants and animals sense things?
- How do plants and animals take in water, food, air, and light?
- How do plants and animals stay safe?

Enduring Understandings

- Unit Anchoring Phenomenon: Some animals take care of their young.
- Offspring are like, but not exactly like, their parents

Skill and Knowledge Objectives

SWBAT:

- Learn that animals of the same kind are similar but can also vary in many ways.
- Observe and record information about different kinds of animals and animals of the same kind.
- Use observations and data to make comparisons of different animals.
- Look for patterns in animal parts to explain similarities and differences in animals.
- Use observations and evidence about plants and animals of the same kind to answer questions.

Assessments

Pre-Assessment:

- Utilize pre-assessment questions at the beginning of each lesson- IE - Think of what you already know about how plants and animals are similar to others of the same kind. Write questions you have.

Formative Assessment:

- Utilize “Check for Understanding” in each lesson’s workbook
- Exit tickets
- Thumbs up, down, sideways

Self-Reflection/Self-Assessment:

- Utilize check for understanding pages and questions in the textbook at the end of each lesson

Summative Assessment:

- [Assessment: How Are Plants and Animals Like Others of the Same Kind? \(English\)](#)

Suggested modifications for assessment

- IEP / 504 / Intervention - Assess students on knowledge rather than ELA skills
 - Make graphic organizers for assessments
 - Allow students to use textbooks and notes to demonstrate understanding
 - Eliminate longer sentence writing/reflections
 - Orally ask questions and orally accept assessment responses to assess knowledge
 - Provide students with choices about how they would like to demonstrate learning
- Enrichment
 - Allow students to further reflect on science topics through writing, projects, presentations
 - Utilize differentiated TCI assessments to create more challenges for higher-level students

Resources

- [TCI Teacher Manual](#)
- [TCI Teacher Log in](#)
- [TCI Interactive Student Workbooks - Unit 1](#)
- [Complete Lesson Guide](#)
- [TCI Kit Materials for Unit 1 Lessons](#)
- [Understanding the Standards | Next Generation Science Standards](#)
- [Assessments Lessons 1-8](#)
- [Lesson games](#)
- [Vocabulary Cards](#)
- [Culturally Responsive Education with TCI Brings Science Alive k-8](#)

Standards including 9.2 Life Literacies and Key Skills 21st Century

Performance Expectation

1-LS1-1 Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.

1-LS1-2 Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.

1-LS3-1 Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.

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.

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.

Science and Engineering Practices

Obtaining, Evaluating, and Communicating Information

- Read grade-appropriate texts and/or use media to obtain scientific and/or technical information to determine patterns in and/or evidence about the natural and designed world(s).
- Obtain information using various texts, text features (e.g., headings, tables of contents, glossaries, electronic menus, icons), and other media that will be useful in answering a scientific question and/or supporting a scientific claim.
- Describe how specific images (e.g., a diagram showing how a machine works) support a scientific or engineering idea.

Engaging in Argument from Evidence

- Make a claim about the effectiveness of an object, tool, or solution that is supported by relevant evidence.
- Listen actively to arguments to indicate agreement or disagreement based on evidence, and/or to retell the main points of the argument.
- Construct an argument with evidence to support a claim.

Analyzing and Interpreting Data

- Record information (observations, thoughts, and ideas).
- Analyze data from tests of an object or tool to determine if it works as intended.

Using Mathematics and Computational Thinking

- Use counting and numbers to identify and describe patterns in the natural and designed world(s).

Planning and Carrying Out Investigations

- Make predictions based on prior experiences.
- Make observations (firsthand or from media) and/or measurements to collect data that can be used to make comparisons.
- Make observations (firsthand or from media) and/or measurements of a proposed object, tool, or solution to determine if it solves a problem or meets a goal.

Constructing Explanations and Designing Solutions

- Make observations (firsthand or from media) to construct an evidence-based account of natural phenomena.
- Use tools and/or materials to design and/or build a device that solves a specific problem or a solution to a specific problem.

Developing and Using Models

- Develop a simple model based on evidence to represent a proposed object or tool.

Crosscutting Concepts

Structure and Function

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

Systems and System Models

- Objects and organisms can be described in terms of their parts.

Patterns

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

Cause and Effect

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

Scale, Proportion, and Quantity

- Relative scales allow objects and events to be compared and described (e.g. bigger and smaller; hotter and colder; faster and slower).
- Standard units are used to measure length.

Stability and Change

- Things may change slowly or rapidly.

• **9.4.2.CT.2: Identify possible approaches and resources to execute a plan (with peers).**

• **9.4.2.CT.3: Use a variety of types of thinking to solve problems.**

Disciplinary Core Ideas

LS1.A: Structure and Function

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

LS1.B: Growth and Development of Organisms

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

LS3.A: Inheritance of Traits

- Young animals are very much, but not exactly, like, their parents. Plants also are very much, but not exactly, like their parents.

LS3.B: Variation of Traits

- Individuals of the same kind of plant or animal are recognizable as similar but can also vary in

many ways.

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.

Connections to the Nature of Science

Science Knowledge Is Based on Empirical Evidence

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

Science Addresses Questions About the Natural and Material World

- Scientists study the natural and material world.

Connections to Engineering, Technology, and Applications of Science

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

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

Complete NGSS Correlations

ELA Standards

Range of Reading and Level of Text Complexity

- CC.1.R.I.10 With prompting and support, read informational texts appropriately complex for grade 1.

Key Ideas and Details

- CC.1.R.I.2 Identify the main topic and retell key details of a text.
- CC.1.R.I.1 Ask and answer questions about key details in a text.

Writing

Research to Build and Present Knowledge

- CC.1.W.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.
- CC.1.W.7 Participate in shared research and writing projects (e.g., explore several "how-to" books on a given topic and use them to write a sequence of instructions).

Speaking and Listening

Comprehension and Collaboration

- CC.1.SL.2 Ask and answer questions about key details in a text read aloud or information presented orally or through other media.
- CC.1.SL.1 Participate in collaborative conversations with diverse partners about grade 1 topics

and texts with peers and adults in small and larger groups.

Presentation of Knowledge and Ideas

- CC.1.SL.6 Produce complete sentences when appropriate to the task and situation. (See grade 1 Language standards 1 and 3 on page 26 for specific expectations.)
- CC.1.SL.4 Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.

Math Standards

MD.Measure lengths indirectly and by iterating length units

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

MP.Use appropriate tools strategically

- CC.K-12.MP.5.Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels can identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They can use technological tools to explore and deepen their understanding of concepts.

**Plant and Animal Parts
Unit 1- Plants and Animals**

Each lesson includes reading and activities and will take 3-4 days to complete

<p>Lesson 1: How Are Plants and Animals Like Others of the Same Kind? Lesson 1 guide Materials:</p> <ul style="list-style-type: none"> ● Handout A: Animal Act-It-Out Cards ● Handout B: Sorting Zoo 	<p>Lesson 2: How Are Plants and Animals Like Their Parents? Lesson 2 guide Materials:</p> <ul style="list-style-type: none"> ● Interactive Student Notebook ● Notebook Answer Key ● Picture Cards A-F 	<p>Lesson 3: What Different Parts Do Plants Have? Materials: Lesson 3 guide</p> <ul style="list-style-type: none"> ● Extension Handout ● Interactive Student Notebook ● Notebook Answer Key 	<p>Lesson 4: What Different Parts Do Animals Have? Materials: Lesson 4 guide</p> <ul style="list-style-type: none"> ● Aluminum foil, roll ● Bag, plastic sandwich size ● Bin, plastic, shoe box 	<p>Lesson 5: How Do Plants and Animals Sense Things? Materials: Lesson 5 guide</p> <ul style="list-style-type: none"> ● Bag, paper ● Beef jerky ● Cardboard ● Cup, plastic ● Juice, fruit ● Straw ● Water
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<ul style="list-style-type: none"> Animals Interactive Student Notebook Notebook Answer Key Science Journal Spanish Handout A: Animal Act-It-Out Cards Spanish Handout B: Sorting Zoo Animals Spanish: Interactive Student Notebook Spanish: Science Journal Super Simple Science <p>Activities: Students will learn that animals of the same kind are similar in many ways but can also vary. Student will go on a "zoo trip" to observe and record information about different kinds of animals and animals of the same kind.</p> <p>Video Lesson Extension: Super Simple Science- Apples: How are apples different from other apples on the inside?</p>	<ul style="list-style-type: none"> Science Journal Spanish: Interactive Student Notebook Spanish: Science Journal Super Simple Science Lesson Guide <p>Activities: Students will learn that plants and animals of one kind are similar but also vary in many ways. Throughout this lesson they will look for patterns in animals in order to match parents with their offspring and make observations of animals to determine ways young animals are or are not like their parents.</p> <p>Video Lesson Extension: Super Simple Science- Giraffes: Are children's fingerprints just like their parents' fingerprints?</p>	<ul style="list-style-type: none"> Science Journal Spanish: Interactive Student Notebook Spanish: Science Journal Super Simple Science Lesson Guide <p>Activities: Students will grow plants and will observe their roots, stems, and leaves. They will use what you learn about plant parts to design a tower that can stand up. Afterwards they will show what they know by drawing and labeling a picture of the different parts of a plant.</p> <p>Video Lesson Extension: Super Simple Science- Venus Fly Trap: What is something you can trap?</p>	<ul style="list-style-type: none"> size Cloth, felt Cotton ball Feather, down Gloves, plastic Glue (SDS) Ice cubes Scissors Shortening stick Sponge Tape Towel, bath Water Yarn Audio Transcript Interactive Student Notebook Notebook Answer Key Picture Cards A-H Science Journal <p>Activities: Students will play a game to identify different parts of an animal. Then, they will use what they know about various parts of animals to design a glove to keep their hand warm. They will show what they know by labeling the parts of an animal in a diagram.</p> <p>Video Lesson Extension: Super Simple Science- Birds use beaks to eat. How does the shape of a bird's beak help a bird get its food?</p>	<ul style="list-style-type: none"> Interactive Student Notebook Notebook Answer Key Science Journal <p>Activities: Students will start by analyzing a picture. Students will compare human and animal senses. Students will experience a picture or an event as a person. Then they will "be" an animal to find out how the animal would sense the same thing. They will label an animal to show how it senses the world around it.</p> <p>Video Lesson Extension: Super Simple Science - Eagles have great eyesight. They use their eyes to help them hunt. How are human eyes similar or different?</p>
Lesson 6: How Do	Lesson 7: How Do	Lesson 8: How Do		

<p>Plants and Animals Take in Water, Food, Air and Light?</p> <p>Materials: <u>Lesson 6 guide</u></p> <ul style="list-style-type: none"> • Index card • Extension Handout • Interactive Student Notebook • Notebook Answer Key • Science Journal <p>Activities: You will watch videos of animals meeting their needs. You will discuss the parts they are using to meet their needs. Then you will find out some ways that humans mimic animal parts. You will create a make-believe animal with parts for taking in water, food, and air.</p> <p>Video Lesson Extension: <u>Super Simple Science - Snakes use their jaws to catch and eat big animals. People can get ideas from nature. How can you design a robot from what you know about snakes?</u></p>	<p>Plants and Animals Stay Safe?</p> <p>Materials: <u>Lesson 7 guide</u></p> <ul style="list-style-type: none"> • Bottle, spray • Coupon, for hermit crabs (5-6) • Gloves, disposable • Hermit crab branch • Hermit crab food • Hermit crab habitat • Hermit crab sand • Petri dish • Handout: Hermit Crabs FAQs • Interactive Student Notebook • Notebook Answer Key <p>Activities Students will complete a hermit crab investigation in this lesson. They will observe how a hermit crab stays safe in its environment.</p> <p>Video Lesson Extension: <u>Super Simple Science - Tell How an Octopus Keeps Safe: How can an octopus's ink help keep it safe?</u></p>	<p>Young Plants and Animals Stay Safe?</p> <p>Materials: <u>Lesson 8 guide</u></p> <ul style="list-style-type: none"> • Glue (SDS) • Scissors • Stapler • Handout A: Keeping Young Animals Safe • Handout B: Sentence Strips • Interactive Student Notebook • Notebook Answer Key • Science Journal <p>Activities: Students will make observations of pictures in the lesson slides relating to young plants and animals. They will observe and discuss how young animals stay safe. Students will make a book to show how adult animals take care of their young.</p> <p>Video Lesson Extension: <u>Super Simple Science - Penguin Parents: What can you make to keep an egg warm?</u></p>		
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Differentiate Instruction by: Support for IEPs, at-risk, MLL (ELL/ESL), Enriched G&T
<http://www.sde.com/Timely-Topics/DI-Assessment-Intervention>

Differentiate Instruction, depending on individual student needs (students with an IEP, 504, or Intervention Plan; ELL Students; Students At Risk; Gifted Students)

1. **ELA/ELD Connections**

Support students who need additional guidance and structure with reading, writing, or vocabulary development with ELA/ELD Connections. Make these toolkits available to your students as an independent tutorial, for class instruction, or use with peer tutoring. Learn more about **Strategies for Integrating Language Arts**.

- **ELA/ELD Connections: Reading Skills**
- **ELA/ELD Connections: Writing Skills**
- **ELA/ELD Connections: Speaking and Listening Toolkit**
- **ELA/ELD Connections: Vocabulary Skills**

Suggestions for how to use these pages are provided at point-of-use throughout the Lesson Guides.

2. **Differentiating Instruction**

Lesson Guides include step-by-step suggestions for meeting the needs of English Learners, students below grade level in reading and writing, special education students, and advanced learners within the context of whole class instruction and with minimal modifications needed on the teacher's part. For more support, see **Best Practices for Differentiating Instruction**.

3. **Reading Support**

The Student Text and Interactive Student Notebook has built-in support for emerging to advanced readers. Learn more about **Literacy in Science**.

- **Reading Support Buttons** allow students to change the text reading level, highlight main ideas, or use text-to-speech audio.
- **Considerate Text** has a single-column layout, section titles, and subheads that divide content into meaningful and manageable chunks, carefully structured paragraphs with topic sentences and supporting details, images that are carefully chosen to support the text, and captions that incorporate main ideas. Learn more about **Considerate Text features**.
- **Vocabulary** is introduced in the Introduction and then defined in-line to support reading fluency. A glossary assists students with essential terms.
- **Lesson Summaries** succinctly review main concepts.
- **The graphically organized notebook** helps students record and remember what they read.

Writing Accommodations

- Use highlighted handwriting paper to help with writing legibility
- Use flat marbles for multisensory finger spacing
- Use a sentence stem and have the student complete the stem
- Use a visual writing checklist so the student knows what is expected next in the lesson

Presentation Accommodations

- Use alternate texts at a lower readability level
- Work with fewer items per page or line and/or materials in a larger print size
- Use a magnification device, screen reader, or Braille / Nemeth Code
- Use audio amplification device (e.g., hearing aid(s), auditory trainer, sound-field system (teacher use of microphone))

- Be given a written list of instructions
- Be given an outline of a lesson
- Be given a copy of the teacher's notes
- Be given an example to assist in preparing for assessments
- Use visual presentations of verbal material, such as word webs and visual organizers
- Use manipulatives to teach or demonstrate concepts

Response Accommodations

- Use sign language, a communication device, Braille, other technology, or a native language other than English
- Dictate answers to a scribe
- Capture responses on an audio recorder
- Use a spelling dictionary or electronic spell-checker
- Use a word processor to type notes or give responses in class

Setting Accommodations

- Work or take a test in a different setting, such as a quiet room with few distractions
- Sit where he learns best (for example, near the teacher & away from distractions)
- Use special lighting or acoustics
- Take a test in a small group setting
- Use sensory tools such as exercise band looped around chair's legs (fidgety kids can kick it and get their energy out)
- Use noise buffers such as headphones, earphones, or earplugs

Timing Accommodations

- Take more time to complete a task or a test
- Have extra time to process oral information and directions
- Take frequent breaks, such as after completing a task

Scheduling Accommodations

- Take more time to complete a project
- Take a test in several timed sessions or over several days
- Take sections of a test in a different order
- Take a test at a specific time of day

Organization Skills Accommodations

- Use an alarm to help with time management
- Mark texts with a highlighter

Assignment Modifications

- Answer fewer or different test questions
- Create alternate projects or assignments

Curriculum Modifications

- Learn different material (such as continuing to work on the core skill such as an opening sentence, 3 detailed reasons, and a closing sentence, while others move ahead to an extension concept/skill)
- Get graded or assessed using a different standard than the one for a classmate

Differentiate Instruction by:

ELA/ELD Support for IEPs, at-risk, MLL (ELL/ESL), Enriched G&T

TCI's commitment to universal access—and our fundamental belief that all children can learn—is shown in these

support features.

1. ELA/ELD Connections

Support students who need additional guidance and structure with reading, writing, or vocabulary development with ELA/ELD Connections. Make these toolkits available to your students as an independent tutorial, for class instruction, or for use with peer tutoring. Learn more about **Strategies for Integrating Language Arts**.

- **ELA/ELD Connections: Reading Skills**
- **ELA/ELD Connections: Writing Skills**
- **ELA/ELD Connections: Speaking and Listening Toolkit**
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2. Differentiating Instruction

Lesson Guides include step-by-step suggestions for meeting the needs of English Learners, students below grade level in reading and writing, special education (plus G&T) students, and advanced learners within the context of whole class instruction and with minimal modifications needed on the teacher's part. For more support, see **Best Practices for Differentiating Instruction**.

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- **Vocabulary** is introduced in the Introduction and then defined in-line to support reading fluency. A glossary assists students with essential terms.
- **Lesson Summaries** succinctly review main concepts.
- **The graphically organized notebook** helps students record and remember what they read.

Informational and literary texts are balanced with at least 50% of reading time devoted to expository texts.

4. Graphic Organizer Toolkit

Use the graphic organizers in this **toolkit** when students need support processing information. These organizers are flexible visual aids that help students map concepts, organize thoughts, and identify relationships between abstract ideas.

This toolkit includes:

- Venn diagrams
- Sequence chains
- Prediction/inference diagrams
- Decision trees
- Webs, timelines, and more

Differentiate Instruction by 504:

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- **ELA/ELD Connections: Reading Skills**
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- **ELA/ELD Connections: Speaking and Listening Toolkit**
- **ELA/ELD Connections: Vocabulary Skills**

Suggestions for how to use these pages are provided at point-of-use throughout the Lesson Guides.

- Webs, timelines, and more

Subject Area: Science

Grade Level: 1

Unit 2: Light and Sound

Dates: December-February (Rotate with Social Studies Unit)

Time Frame: 12 weeks

Overview

In this unit, students explore light and sound by discovering how light helps us see, how light travels, how sound is made, and how sound travels. Students then combine both light and sound to find out about the ways people use light and sound to send messages. Through a series of fun images and videos, students will learn that objects can only be seen when light illuminates them. Students will create their own instruments and learn about how sound is made. They will even form a garage band with their different instruments to show how sounds make other objects vibrate.

Essential Questions

- How does light help you see?
- How does light travel?
- How are shadows made?
- How is a sound made?
- How does sound travel?
- How do people use light and sound to send messages?

Enduring Understandings

- Students understand the first part of the unit anchoring phenomenon where they cannot see in the dark and need lights to illuminate dark places.
- Students will analyze how light behaves and that light is necessary to see.
- Students will connect what they know to shadows in a tent, and determine whether a tent would block some/all of the light of a flashlight.
- In the second part of explaining the unit anchoring phenomenon, students examine how sound is made.
- Students explore how sound waves travel and conclude that sound waves are mechanical and not the same as light waves.

- Students conclude that although you can't see in the dark, communicating with messages can still be accomplished by using other means.

Skill and Knowledge Objectives

SWBAT:

- To assess the cause-and-effect relationship between light and seeing.
- To show what light will do when it hits different objects as they examine what happens when light shines on a mirror.
- Use simple tests to support ideas about causes to discover that one object can make different shadows that may be big or small, long or short. Students then plan a shadow puppet show.
- Use tools and materials provided to design a secret code that uses light or sound to send a message across a room.

Assessments

Pre-Assessment:

- Utilize pre-assessment questions at the beginning of each lesson- IE - Think of this concept: You can't see in the dark, but you can hear in the dark. List what you know about this phenomenon. Write what you wonder about this phenomenon.

Formative Assessment:

- Utilize "Check for Understanding" in each lesson's workbook
- Exit tickets
- Use - Thumbs up, down, sideways

Self-Reflection/Self-Assessment:

- Utilize check for understanding pages and questions in the textbook at the end of each lesson

Summative Assessment:

- TCI Written Assessments for Lessons 1-6
- [Performance Assessment: Exploring with Light](#)
- [Performance Assessment: Sending Messages with Sound](#)

Suggested modifications for assessment

- IEP / 504 / intervention - Assess students on knowledge rather than ELA skills
 - Make graphic organizers for assessments
 - Allow students to use textbooks and notes to demonstrate understanding
 - Eliminate longer sentence writing/reflections
 - Orally ask questions and orally accept assessment responses to assess knowledge
 - Provide students with choices about how they would like to demonstrate learning
- Enrichment
 - Allow students to further reflect on science topics through writing, projects, presentations
 - Utilize differentiated TCI assessments to create more challenges for higher-level students

Resources

- TCI Teacher Manual
- [TCI Teacher Log in](#)
- TCI Interactive Student Workbooks - Unit 2 - Light and Sound
- Complete Lesson Guide
- TCI Kit Materials for Unit 2 Lessons
- <https://www.nextgenscience.org/understanding-standards/understanding-standards>
- Assessments Lessons 1-6
- Lesson games
- Vocabulary Cards
- Culturally Responsive Education with TCI Brings Science Alive k-8

Standards

Next Generation Science Standards

Performance Expectation

1-PS4-1 Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. **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. **1-PS4-2** Make observations to construct an evidence-based account that objects can be seen only when illuminated. **1-PS4-3** Plan and investigate to determine the effect of placing objects made with different materials in the path of a beam of light.

Science and Engineering Practices

Constructing Explanations and Designing Solutions

- Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena.
- Use tools and/or materials to design and/or build a device that solves a specific problem or a solution to a specific problem.

Planning and Carrying Out Investigations

- Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question.

Asking Questions and Defining Problems

- Ask questions based on observations to find more information about the natural and/or designed world(s).
- Ask and/or identify questions that can be answered by an investigation.

Developing and Using Models

- Develop a simple model based on evidence to represent a proposed object or tool.

Analyzing and Interpreting Data

- Record information (observations, thoughts, and ideas).
- Use observations (firsthand or from media) to describe patterns and/or relationships in the natural and designed world(s) in order to answer scientific questions and solve problems.
- Use and share pictures, drawings, and/or writings of observations.

Obtaining, Evaluating, and Communicating Information

- Describe how specific images (e.g., a diagram showing how a machine works) support a scientific or engineering idea.

Crosscutting Concepts

Cause and Effect

- Simple tests can be designed to gather evidence to support or refute student ideas about causes.
- Events have causes that generate observable patterns.

Energy and Matter

- Objects may break into smaller pieces, be put together into larger pieces, or change shapes.

Structure and Function

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

Scale, Proportion, and Quantity

- Relative scales allow objects and events to be compared and described (e.g. bigger and smaller; hotter and colder; faster and slower).

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 also use a variety of devices to communicate (send and receive information) over long distances.

PS4.B: Electromagnetic Radiation

- Objects can be seen only when light is available to illuminate them. Some objects 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.

Connections to the Nature of Science

Scientific Investigations Use a Variety of Methods

- Scientists use different ways to study the world.
- Science investigations begin with a question.

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.

Complete NGSS Correlations

ELA Standards and 9.2 Life Literacies & Key Skills 21st Century

Writing

Text Types and Purposes

- CC.1.W.2 Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.

Research to Build and Present Knowledge

- CC.1.W.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.
- CC.1.W.7 Participate in shared research and writing projects (e.g., explore several “how-to” books on a given topic and use them to write a sequence of instructions).

Speaking and Listening

Comprehension and Collaboration

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

• **9.4.2.CT.2: Identify possible approaches and resources to execute a plan.**

• **9.4.2.CT.3: Use a variety of types of thinking to solve problems.**

Unit Name/Theme				
Lesson 1: How Does Light Help You See?	Lesson 2: How Does Light Travel?	Lesson 3: How Are Shadows Made?	Lesson 4: How Is Sound Made?	Lesson 5: How Does Sound Travel

<p><u>Lesson 1 Guide</u></p> <p>Materials:</p> <ul style="list-style-type: none"> • Marker, assorted colors • Paper, construction, assorted colors • Paper, white • Stapler <p>Print</p> <ul style="list-style-type: none"> • Extension Handout • Interactive Student Notebook • Notebook Answer Key • Science Journal • Spanish: Interactive Student Notebook • Spanish: Science Journal • Super Simple Science • Lesson Guide <p>Activities: You will start by analyzing a picture. Then you'll be introduced to the lesson phenomenon, which you will be able to explain by the end of the lesson. [5-10 min]</p> <p>Investigation You will create a secret code that uses light or sound to send a message across a room. You will use the code to play a game like Simon Says. [70 min]</p>	<p><u>Lesson 2 Guide</u></p> <p>Materials:</p> <ul style="list-style-type: none"> • Aluminum foil, roll • Battery, size D • Cardboard, white, letter size • Flashlight, plastic (size D) □ • Mirror • Newspaper • Paper, construction, black • Paper, tissue • Sticky notes, 3x3" • Tape, scotch • Transparency sheet • Wax paper <p>Print</p> <ul style="list-style-type: none"> • Extension Handout • Interactive Student Notebook • Notebook Answer Key • Science Journal • Spanish: Interactive Student Notebook • Spanish: Science Journal • Super Simple Science • Lesson Guide <p>Activities: You will start by analyzing a picture. Then you'll be introduced to the lesson phenomenon, which you will be able to explain by the end of the lesson. [5-10 min]</p>	<p><u>Lesson 3 Guide</u></p> <p>Materials</p> <ul style="list-style-type: none"> • Battery, size D • Craft stick • Flashlight, plastic (size D) • Glue (SDS) • Scissors • Print • Handout: Puppet Outline • Interactive Student Notebook • Notebook Answer Key • Science Journal • Spanish Handout: Puppet Outline • Spanish: Interactive Student Notebook • Spanish: Science Journal • Super Simple Science • Lesson Guide <p>Activities: You will start by analyzing a picture. Then you'll be introduced to the lesson phenomenon, which you will be able to explain by the end of the lesson. [5-10 min]</p> <p>Investigation You will learn that one object can make different shadows. Then you will plan a shadow puppet show. Your show will have two characters, but you will use only one</p>	<p><u>Lesson 4 Guide</u></p> <p>Materials:</p> <ul style="list-style-type: none"> • Balloon • Bin, plastic, shoe box size • Bowl • Box, cardboard (3.5" x 3.5" x 1.5") • Jar, plastic • Pan, aluminum foil, 9 x 13" • Rubber band • Ruler • Sand, medium (SDS) • Speaker • Tuning fork, 256 vps <p>Print</p> <ul style="list-style-type: none"> • Interactive Student Notebook • Notebook Answer Key • Science Journal • Spanish: Interactive Student Notebook • Spanish: Science Journal • Super Simple Science • Lesson Guide <p>Activities: You will start by analyzing a picture. Then you'll be introduced to the lesson phenomenon, which you will be able to explain by the end of the lesson. [5-10 min]</p> <p>Investigation</p>	<p><u>Lesson 5 Guide</u></p> <p>Materials:</p> <ul style="list-style-type: none"> • Ball, rubber, 2" • Book • Cup, plastic • Pan, aluminum, pie • Pen • Ruler • Tuning fork, 256 vps • Yarn <p>Print</p> <ul style="list-style-type: none"> • Extension Handout • Interactive Student Notebook • Notebook Answer Key • Science Journal • Spanish: Interactive Student Notebook • Spanish: Science Journal • Super Simple Science • Lesson Guide <p>Activities: You will start by analyzing a picture. Then you'll be introduced to the lesson phenomenon, which you will be able to explain by the end of the lesson. [5-10 min]</p> <p>Investigation You will find out if sound from a tuning fork can travel through yarn. Then you will plan your own investigation to test whether other sounds</p>
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<p>Making Sense of the Phenomenon You will show what you know by designing a way to send a message using only light or only sound. [10-15 min]</p> <p>Video Lesson Extension:Super Simple Science-Flashing Lights In The Night: Fireflies make their own light. They flash a signal so other fireflies can find them.</p> <p>What is a way you can use light to model a firefly and make a signal?</p>	<p>min]</p> <p>Investigation You will test what happens when you place different materials in the path of a beam of light. [75 min]</p> <p>Making Sense of the Phenomenon You will show what light will do when it hits different objects. [10-15 min]</p> <p>Video Lesson Extension:Super Simple Science-Fun with Fun House Mirrors:Fun house mirrors are curved. They change the way light bounces to your eyes.</p> <p>How do you think light will bounce off a shiny spoon?</p>	<p>puppet! [95 min]</p> <p>Making Sense of the Phenomenon You will show what you know by planning a shadow puppet show. [10-15 min]</p> <p>Video Lesson Extension:Super Simple Science-Stories Told With Shadows:Shadow puppets tell stories. Puppets are made by cutting paper into shapes.</p> <p>What happens when shadow puppets have holes?</p>	<p>You will form a garage band and make sounds with different instruments. Your garage band will perform on stage. Then you'll show how sounds make other objects vibrate. [80 min]</p> <p>Making Sense of the Phenomenon You will show what you know by watching a video and explaining how the sounds are made. [10-15 min]</p> <p>Video Lesson Extension:Super Simple Science: The Loudest Sound In Nature: A volcano called Krakatoa made the loudest sound on Earth. It happened far away.</p> <p>What things make loud sounds where you live?</p>	<p>can travel through yarn. [70 min]</p> <p>Making Sense of the Phenomenon You will show what you know by thinking of a science question about sound and planning an investigation. [10-15 min]</p> <p>Video Lesson Extension:Super Simple Science Echos In The Dark: Bats find insects by listening for echoes. Submarines use echoes to find nearby objects.</p> <p>Can you tell where an object is in a place that echoes?</p> <p>Find the Sound</p> <p>Plan how to answer these questions: When are sounds louder or softer? How does sound travel in a room to cause echoes?</p>
<p>Lesson 6:How Do People Use Light and Sound to Send Messages?</p> <p>Lesson 6 Guide</p> <p>Materials:</p> <ul style="list-style-type: none"> • Battery, size D • Bin, plastic, shoe box size • Flashlight, plastic (size D) <input type="checkbox"/> • Mirror 				

- Pan, aluminum, pie
- Ruler

Print

- Extension Handout
- Interactive Student Notebook
- Notebook Answer Key
- Science Journal
- Spanish: Interactive Student Notebook
- Spanish: Science Journal
- Super Simple Science
- Lesson Guide

Activities:

You will start by analyzing a picture. Then you'll be introduced to the lesson phenomenon, which you will be able to explain by the end of the lesson. [5-10 min]

Investigation

You will create a secret code that uses light or sound to send a message across a room. You will use the code to play a game like Simon Says. [70 min]

Making Sense of the Phenomenon

You will show what you know by designing a way to send a message

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<p>using only light or only sound. [10-15 min]</p> <p>Video Lesson Extension: Super Simple Science: Sending Messages With Light: Light travels through glass threads to send messages.</p> <p>Can you send light to travel through glass?</p>				
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Differentiate Instruction by: Support for IEPs, at-risk, MLL (ELL/ESL), Enriched G&T

<http://www.sde.com/Timely-Topics/DI-Assessment-Intervention>

Differentiate Instruction, depending on individual student needs (students with an IEP, 504, or Intervention Plan; ELL Students; Students At Risk; Gifted Students)

1. ELA/ELD Connections

Support students who need additional guidance and structure with reading, writing, or vocabulary development with ELA/ELD Connections. Make these toolkits available to your students as an independent tutorial, for class instruction, or for use with peer tutoring. Learn more about **Strategies for Integrating Language Arts**.

- **ELA/ELD Connections: Reading Skills**
- **ELA/ELD Connections: Writing Skills**
- **ELA/ELD Connections: Speaking and Listening Toolkit**
- **ELA/ELD Connections: Vocabulary Skills**

Suggestions for how to use these pages are provided at point-of-use throughout the Lesson Guides.

2. Differentiating Instruction

Lesson Guides include step-by-step suggestions for meeting the needs of English Learners, students below grade level in reading and writing, special education students, and advanced learners within the context of whole class instruction and with minimal modifications needed on the teacher's part. For more support, see **Best Practices for Differentiating Instruction**.

3. Reading Support

The Student Text and Interactive Student Notebook has built-in support for emerging to advanced readers. Learn more about **Literacy in Science**.

- **Reading Support Buttons** allow students to change the text reading level, highlight main ideas, or use text-to-speech audio.
- **Considerate Text** has a single-column layout, section titles, and subheads that divide content into meaningful and manageable chunks, carefully structured paragraphs with topic sentences

and supporting details, images that are carefully chosen to support the text, and captions that incorporate main ideas. Learn more about **Considerate Text features**.

- **Vocabulary** is introduced in the Introduction and then defined in-line to support reading fluency. A glossary assists students with essential terms.
- **Lesson Summaries** succinctly review main concepts.
- **The graphically organized notebook** helps students record and remember what they read.

Writing Accommodations

- Use highlighted handwriting paper to help with writing legibility
- Use flat marbles for multisensory finger spacing
- Use a sentence stem and have the student complete the stem
- Use a visual writing checklist so the student knows what is expected next in the lesson

Presentation Accommodations

- Use alternate texts at a lower readability level
- Work with fewer items per page or line and/or materials in a larger print size
- Use a magnification device, screen reader, or Braille / Nemeth Code
- Use audio amplification device (e.g., hearing aid(s), auditory trainer, sound-field system (teacher use of microphone))
- Be given a written list of instructions
- Be given an outline of a lesson
- Be given a copy of the teacher's notes
- Be given an example to assist in preparing for assessments
- Use visual presentations of verbal material, such as word webs and visual organizers
- Use manipulatives to teach or demonstrate concepts

Response Accommodations

- Use sign language, a communication device, Braille, other technology, or a native language other than English
- Dictate answers to a scribe
- Capture responses on an audio recorder
- Use a spelling dictionary or electronic spell-checker
- Use a word processor to type notes or give responses in class

Setting Accommodations

- Work or take a test in a different setting, such as a quiet room with few distractions
- Sit where he learns best (for example, near the teacher & away from distractions)
- Use special lighting or acoustics
- Take a test in a small group setting
- Use sensory tools such as an exercise band looped around chair's legs (fidgety kids can kick it and get their energy out)
- Use noise buffers such as headphones, earphones, or earplugs

Timing Accommodations

- Take more time to complete a task or a test
- Have extra time to process oral information and directions
- Take frequent breaks, such as after completing a task

Scheduling Accommodations

- Take more time to complete a project
- Take a test in several timed sessions or over several days
- Take sections of a test in a different order
- Take a test at a specific time of day

Organization Skills Accommodations

- Use an alarm to help with time management
- Mark texts with a highlighter

Assignment Modifications

- Answer fewer or different test questions
- Create alternate projects or assignments

Curriculum Modifications

- Learn different material (such as continuing to work on the core skill such as an opening sentence, 3 detailed reasons, and a closing sentence, while others move ahead to an extension concept/skill)
- Get graded or assessed using a different standard than the one for a classmate

Differentiate Instruction by:

ELA/ELD Support for IEPs, at-risk, MLL (ELL/ESL), Enriched G&T

TCI's commitment to universal access—and our fundamental belief that all children can learn—is shown in these support features.

1. ELA/ELD Connections

Support students who need additional guidance and structure with reading, writing, or vocabulary development with ELA/ELD Connections. Make these toolkits available to your students as an independent tutorial, for class instruction, or for use with peer tutoring. Learn more about **Strategies for Integrating Language Arts**.

- **ELA/ELD Connections: Reading Skills**
- **ELA/ELD Connections: Writing Skills**
- **ELA/ELD Connections: Speaking and Listening Toolkit**
- **ELA/ELD Connections: Vocabulary Skills**

Suggestions for how to use these pages are provided at point-of-use throughout the Lesson Guides.

2. Differentiating Instruction

Lesson Guides include step-by-step suggestions for meeting the needs of English Learners, students below grade level in reading and writing, special education (plus G&T) students, and advanced learners within the context of whole class instruction, and with minimal modifications needed on the teacher's part. For more support, see **Best Practices for Differentiating Instruction**.

3. Reading Support

The Student Text and Interactive Student Notebook has built-in support for emerging to advanced readers. Learn more about **Literacy in Science**.

- **Reading Support Buttons** allow students to change the text reading level, highlight main ideas, or use text-to-speech audio.
- **Considerate Text** has a single-column layout, section titles, and subheads that divide content into meaningful and manageable chunks, carefully structured paragraphs with topic sentences and supporting details, images that are carefully chosen to support the text, and captions that incorporate main ideas. Learn more about **Considerate Text features**.
- **Vocabulary** is introduced in the Introduction and then defined in-line to support reading fluency. A glossary assists students with essential terms.
- **Lesson Summaries** succinctly review main concepts.
- **The graphically organized notebook** helps students record and remember what they read.

Informational and literary texts are balanced with at least 50% of reading time devoted to expository texts.

4. Graphic Organizer Toolkit

Use the graphic organizers in this **toolkit** when students need support processing information. These organizers are flexible visual aids that help students map concepts, organize thoughts, and identify relationships between abstract ideas.

This toolkit includes:

- Venn diagrams
- Sequence chains
- Prediction/inference diagrams
- Decision trees
- Webs, timelines, and more

Differentiate Instruction by 504:

TCI's commitment to universal access—and our fundamental belief that all children can learn—is shown in these support features.

1. ELA/ELD Connections

Support students who need additional guidance and structure with reading, writing, or vocabulary development with ELA/ELD Connections. Make these toolkits available to your students as an independent tutorial, for class instruction, or for use with peer tutoring. Learn more about **Strategies for Integrating Language Arts**.

- **ELA/ELD Connections: Reading Skills**
- **ELA/ELD Connections: Writing Skills**
- **ELA/ELD Connections: Speaking and Listening Toolkit**
- **ELA/ELD Connections: Vocabulary Skills**

Suggestions for how to use these pages are provided at point-of-use throughout the Lesson Guides.

- Webs, timelines, and more

Subject Area: Science

Grade Level: 1

Unit 3: Sky Patterns

Dates: March-May (Rotate with Social Studies Unit)

Time Frame: 12 weeks

Overview

In this unit, students are introduced to the unit's anchoring phenomenon of how the moon can be seen in the sky at different times. Acting as space detectives, students make careful observations from media and find patterns in the natural world to solve the mystery of the daytime moon as well as explain other phenomena in the sky such as the sun and stars. Students conclude the sky is light during the day and dark during the night. Students analyze patterns in images and discover

that different objects, such as the sun, moon, and stars, are always, sometimes, or never seen in the day and night skies. Using what they know, can students explain the movement of the moon and why it is always, sometimes, or never seen in the day and night skies?

Essential Questions

- What do you see in the sky?
- Where is the sun in the sky?
- What makes the moon so bright?
- How long is the sun in the sky?
- Does the moon appear differently at other times of the year?
- Where is the moon in the sky?
- Where are the stars in the sky?
- In what ways does the light from a full moon affect how well you can see stars at night?"

Enduring Understandings

- Students are introduced to the unit phenomenon and make observations of the motion of the moon.
- We see different things in the day and the night skies.
- The sun shines during the day so you can see many things such as clouds, trees, airplanes, and other objects.
- At night, you see stars and sometimes the moon.
- When scientists find a pattern, they watch it repeat. They use patterns to predict the future.
- The sky is light during the day and dark at night. It repeats. This is the pattern.
- The sun is in different parts of the sky at different times of the day. Sometimes it is high in the sky. Sometimes it is low.
- The sun rises in the east. The sun appears low in the sky and seems to rise higher. It is highest in the middle of the day. Then the sun seems to move lower in the sky. The sun sets in the west. It appears to leave the sky.
- Engineers use the pattern to predict where the sun will be. This helps when designing buildings and other things.
- Some days, the sun can be in the sky for a shorter time or a longer time. We can observe the sun rising or setting early on some days and later on other days.
- The sun is in the sky the longest on the first day of summer. Then the days start getting shorter. The shortest day is the first day of winter. Then the days start getting longer. This is a pattern. A pattern tells us about how long the sun is in the sky each season. If you know the season, you can tell whether the sun will be in the sky for a longer or a shorter time.
- In the investigation, we used a graph to show the number of hours the sun was in the sky. The graph helped us compare the number of hours of daylight in different seasons.
- The stars seem to move across the sky. They do not stay in one place. Some stars look like they form a picture in the sky.
- The telescope was invented to help people see space objects better. It makes things look bigger, brighter, and clearer.

- | | |
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| | <ul style="list-style-type: none">• We can learn about science by making observations and by reading information. |
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Skill and Knowledge Objectives

SWBAT:

- Describe and answer questions about the sun, moon, and stars in the day and night skies.
- Use evidence from observations to support a claim that the sky is day or night.
- Sort and classify pictures of the sky as belonging to day or night.
- Observe and describe patterns in the day and night sky.
- Use observations to predict patterns of the sun, moon, and stars.
- Understand the patterns of the motion of objects in the sky.
- Observe and describe patterns in the way the sun appears to move across the sky during the day.
- Engineer a playhouse with windows that let sunshine into the playhouse all day.
- Identify and understand the problem before designing a solution.
- Model how the sun moves to observe and predict where the sun will shine on the playhouse.
- Design where the windows will be and test their designs.
- Identify the changing seasons as a pattern.
- Name a season then order the seasons that follow it.
- Collect data about the number of daylight hours for each season and use the data to make a bar graph.
- Use data to make a bar graph about daylight hours in each season then use data to make a bar graph.
- Compare the number of hours of daylight in different seasons.
- Learn that patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted.
- Observe images that show a pattern of the moon's path in one night to use as evidence to order the moon phases in a flip book.
- Use observations of pictures of moon phases to describe the pattern of the moon as it appears in the sky during one month.
- Ask questions about stars that can be answered by an investigation.
- Describe patterns of the motions of stars in the sky.
- Watch videos of stars and use the observations to describe patterns and relationships between the stars.
- Listen to answers to questions about stars in the night sky.

Assessments

Pre-Assessment:

- Utilize pre-assessment questions at the beginning of each lesson- IE - Think of this concept: The moon can be seen at different times. Write what you know and what you wonder about this phenomenon.

Formative Assessment:

- Utilize “Check for Understanding” in each lesson’s workbook
- Exit tickets
- Use - Thumbs up, down, sideways

Self-Reflection/Self-Assessment:

- Utilize check for understanding pages and questions in the textbook at the end of each lesson

Summative Assessment:

- TCI Written/ Digital Assessments for Lessons 1-5
- Performance Assessment: Solving Sky Mysteries

Suggested modifications for assessment

- IEP / 504 / Intervention - Assess students on knowledge rather than ELA skills
 - Make graphic organizers for assessments
 - Allow students to use textbooks and notes to demonstrate understanding
 - Eliminate longer sentence writing/reflections
 - Orally ask questions and orally accept assessment responses to assess knowledge
 - Provide students with choices about how they would like to demonstrate learning
- Enrichment
 - Allow students to further reflect on science topics through writing, projects, presentations
 - Utilize differentiated TCI assessments to create more challenges for higher-level students

See the differentiation section for further modifications and support

Resources

- TCI Teacher Manual
- TCI Teacher Log in
- TCI Interactive Student Workbooks - Unit 3 - Sky Patterns
- Complete Lesson Guides for all lessons
- TCI Kit Materials for Unit 3 Lessons
- <https://www.nextgenscience.org/understanding-standards/understanding-standards>
- Assessments Lessons 1-5
- Lesson games
- Vocabulary Cards
- Culturally Responsive Education with TCI Brings Science Alive k-8

Standards including 9.2 Life Literacies and Key Skills 21st Century

Performance Expectation

1-ESS1-1 Use observations of the sun, moon, and stars to describe patterns that can be predicted.
K-2-ETS1-2 Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem. **K-2-ETS1-1** 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. **1-ESS1-2** Make observations at different times of year to relate the amount of daylight to the time of year.

Science and Engineering Practices

Analyzing and Interpreting Data

- Use observations (firsthand or from media) to describe patterns and/or relationships in the natural and designed world(s) to answer scientific questions and solve problems.
- Analyze data from tests of an object or tool to determine if it works as intended
- Use and share pictures, drawings, and/or writings of observations.

Developing and Using Models

- Develop and/or use a model to represent amounts, relationships, relative scales (bigger, smaller), and/or patterns in the natural and designed world(s).

Obtaining, Evaluating, and Communicating Information

- Communicate information or design ideas and/or solutions with others in oral and/or written forms using models, drawings, writing, or numbers that provide details about scientific ideas, practices, and/or design ideas.

Asking Questions and Defining Problems

- Ask and/or identify questions that can be answered by an investigation.
- Define a simple problem that can be solved through the development of a new or improved object or tool.
- Ask questions based on observations to find more information about the natural and/or designed world(s).

Engaging in Argument from Evidence

- Construct an argument with evidence to support a claim.

Planning and Carrying Out Investigations

- Make observations (firsthand or from media) and/or measurements to collect data that can be used to make comparisons.
- Make predictions based on prior experiences.

Using Mathematics and Computational Thinking

- Describe, measure, and/or compare quantitative attributes of different objects and display the data using simple graphs.

Crosscutting Concepts

Patterns

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

phenomena, and used as evidence.

Stability and Change

- Things may change slowly or rapidly.
- Some things stay the same while other things change.

Structure and Function

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

Cause and Effect

- Events have causes that generate observable patterns.

• 9.4.2.CT.2: Identify possible approaches and resources to execute a plan.

• 9.4.2.CT.3: Use a variety of types of thinking to solve problems.

Disciplinary Core Ideas

ESS1.A: The Universe and Its Stars

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

ETS1.A: Defining and Delimiting Engineering Problems

- Before beginning to design a solution, it is important to clearly understand the problem.
- Asking questions, making observations, and gathering information help think about problems.
- A situation that people want to change or create can be approached as a problem to be solved through engineering. Such problems may have many acceptable solutions.

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.

ESS1.B: Earth and the Solar System

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

Connections to Nature of Science

Scientific Knowledge Assumes an Order and Consistency in Natural Systems

- Many events are repeated.

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

Connections to Engineering, Technology, and Applications of Science

Interdependence of Science, Engineering, and Technology

- Science and engineering involve the use of tools to observe and measure things.

Complete NGSS Correlations

ELA Standards

Writing

Text Types and Purposes

- CC.1.W.3 Write narratives in which they recount two or more appropriately sequenced events, include some details regarding what happened, use temporal words to signal event order, and provide some sense of closure.

Research to Build and Present Knowledge

- CC.1.W.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.

Speaking and Listening

Presentation of Knowledge and Ideas

- CC.1.SL.6 Produce complete sentences when appropriate to the task and situation. (See grade 1 Language standards 1 and 3 on page 26 for specific expectations.)

Language

Conventions of Standard English

- CC.1.L.2 Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- CC.1.L.1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

Math Standards

Math

OA.Represent and solve problems involving addition and subtraction

- CC.1.OA.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 with a symbol for the unknown number to represent the problem.

MD.Represent and interpret data

- CC.1.MD.4.Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many are in each category, and how many more or less are in one category than in another

Unit Name/Theme

Unit Name/Theme				
<p>Lesson 1: What Do You See in the Sky?</p> <p><u>Lesson 1 Guide</u></p> <p>Materials:</p> <ul style="list-style-type: none"> ● Glue (SDS) ● Scissors <p>Print</p> <ul style="list-style-type: none"> ● Handout: Sky Pictures ● Interactive Student Notebook ● Notebook Answer Key ● Science Journal ● Spanish Handout: Sky Pictures ● Spanish: Interactive Student Notebook ● Spanish: Science Journal ● Super Simple Science ● Lesson Guide <p>Activities: You will start by analyzing a picture. Then you'll be introduced to the lesson phenomenon, which you will be able to explain by the end of the lesson. [5-10</p>	<p>Lesson 2: Where Is The Sun in the Sky?</p> <p><u>Lesson 2 Guide</u></p> <p>Materials:</p> <ul style="list-style-type: none"> ● Battery, size D ● Cardboard, white, letter size ● Flashlight, plastic (size D) ● Scissors ● Sticky notes, 3x3" ● Tape, scotch <p>Print</p> <ul style="list-style-type: none"> ● Interactive Student Notebook ● Notebook Answer Key ● Science Journal ● Spanish: Interactive Student Notebook ● Spanish: Science Journal ● Super Simple Science ● Lesson Guide <p>Activities: You will start by analyzing a picture. Then you'll be introduced to the lesson phenomenon,</p>	<p>Lesson 3: How Long Is the Sun in the Sky?</p> <p><u>Lesson 3 Guide</u></p> <p>Materials:</p> <ul style="list-style-type: none"> ● Marker, assorted colors ● Paper clip, small <p>Print</p> <ul style="list-style-type: none"> ● Handout: Dial-a-Season ● Interactive Student Notebook ● Notebook Answer Key ● Science Journal ● Spanish Handout: Dial-a-Season ● Spanish: Interactive Student Notebook ● Spanish: Science Journal ● Super Simple Science ● Lesson Guide <p>Activities: You will start by analyzing a picture. Then you'll be introduced to the lesson phenomenon, which you will be able to explain by the end</p>	<p>Lesson 4: Where is the Moon in the Sky?</p> <p><u>Lesson 4 Guide</u></p> <p>Materials:</p> <ul style="list-style-type: none"> ● Glue (SDS) <p>Print</p> <ul style="list-style-type: none"> ● Handout A: Where Is the Moon in the Sky? ● Handout B: Moon Shapes ● Handout C: Moon Calendar ● Interactive Student Notebook ● Notebook Answer Key ● Science Journal ● Spanish Handout A: Where Is the Moon in the Sky? ● Spanish Handout B: Moon Shapes ● Spanish Handout C: Moon Calendar ● Spanish: Interactive Student Notebook ● Spanish: Science Journal 	<p>Lesson 5: Where Are the Stars in the Sky?</p> <p><u>Lesson 5 Guide</u></p> <p>Materials:</p> <ul style="list-style-type: none"> ● Flashlight, plastic (size D) <p>Print</p> <ul style="list-style-type: none"> ● Extension Handout ● Interactive Student Notebook ● Notebook Answer Key ● Picture Cards A-H ● Science Journal ● Spanish: Interactive Student Notebook ● Spanish: Science Journal ● Super Simple Science ● Lesson Guide <p>Activities: You will start by analyzing a picture. Then you'll be introduced to the lesson phenomenon, which you will be able to explain by the end of the lesson. [5-10</p>

<p>min]</p> <p>Investigation You will study photographs of the sky. You will make lists of space objects you can see in the sky during the day and at night. [40 min]</p> <p>Making Sense of the Phenomenon You will show what you know by drawing what you see in the day and the night skies. [10-15 min]</p> <p>Video Lesson Extension:Super Simple Science- Stars twinkle in the night sky. Far away from cities it is easier to see stars.</p> <p>What do you see in the night sky near where you live?</p>	<p>which you will be able to explain by the end of the lesson. [5-10 min]</p> <p>Investigation You will act as engineers. You will design a playhouse with windows that let the sun shine inside all day long. You will make a model and test it. [60 min]</p> <p>Making Sense of the Phenomenon You will show where the sun is in the sky at different times of the day. [10-15 min]</p> <p>Video Lesson Extension:Super Simple Science- Shadows tell where the sun is. Long ago people used sundials to tell the time of day.</p> <p>How can you make your own sundial?</p>	<p>of the lesson. [5-10 min]</p> <p>Investigation You will play a game called Dial-a-Season. Then you will collect and graph data about the amount of daylight in each season. [65 min]</p> <p>Making Sense of the Phenomenon You will show what you know by answering riddles about the seasons. [10-15 min]</p> <p>Video Lesson Extension:Super Simple Science- In Barrow, Alaska, in summer, the sky is light at night.</p> <p>In winter, the sky is dark during the day.</p> <p>Can you guess what people are doing based on the time of day?</p>	<ul style="list-style-type: none"> • Super Simple Science • Lesson Guide <p>Activities: You will start by analyzing a picture. Then you'll be introduced to the lesson phenomenon, which you will be able to explain by the end of the lesson. [5-10 min]</p> <p>Investigation You will look for patterns as you create a flip book to show the moon's path across the sky in one night and a calendar to show the moon's shape at different times of the month. You will use the patterns to predict the shape of the moon and where it will be in the sky. [55 min]</p> <p>Making Sense of the Phenomenon You will show what you know by drawing the path of the moon on two nights. [10-15 min]</p> <p>Video Lesson Extension:Super Simple Science- From the moon, Earth looks far away.</p> <p>What far away things do you see in</p>	<p>min]</p> <p>Investigation You will go stargazing. You will observe stars in the night sky, and you will learn about the stars from experts—your classmates! [75 min]</p> <p>Making Sense of the Phenomenon You will show what you know by answering a question about the stars. [10-15 min]</p> <p>Video Lesson Extension:Super Simple Science- Scorpio is a star pattern in the night sky.</p> <p>What other star patterns are in the night sky? What patterns do you see?</p>
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			the night sky from Earth?	
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Differentiate Instruction by: Support for IEPs, at-risk, MLL (ELL/ESL), Enriched G&T

<http://www.sde.com/Timely-Topics/DI-Assessment-Intervention>

Differentiate Instruction, depending on individual student needs (students with an IEP, 504, or Intervention Plan; ELL Students; Students At Risk; Gifted Students)

1. ELA/ELD Connections

Support students who need additional guidance and structure with reading, writing, or vocabulary development with ELA/ELD Connections. Make these toolkits available to your students as an independent tutorial, for class instruction, or for use with peer tutoring. Learn more about **Strategies for Integrating Language Arts**.

- **ELA/ELD Connections: Reading Skills**
- **ELA/ELD Connections: Writing Skills**
- **ELA/ELD Connections: Speaking and Listening Toolkit**
- **ELA/ELD Connections: Vocabulary Skills**

Suggestions for how to use these pages are provided at point-of-use throughout the Lesson Guides.

2. Differentiating Instruction

Lesson Guides include step-by-step suggestions for meeting the needs of English Learners, students below grade level in reading and writing, special education students, and advanced learners within the context of whole class instruction and with minimal modifications needed on the teacher's part. For more support, see **Best Practices for Differentiating Instruction**.

3. Reading Support

The Student Text and Interactive Student Notebook has built-in support for emerging to advanced readers. Learn more about **Literacy in Science**.

- **Reading Support Buttons** allow students to change the text reading level, highlight main ideas, or use text-to-speech audio.
- **Considerate Text** has a single-column layout, section titles, and subheads that divide content into meaningful and manageable chunks, carefully structured paragraphs with topic sentences and supporting details, images that are carefully chosen to support the text, and captions that incorporate main ideas. Learn more about **Considerate Text features**.
- **Vocabulary** is introduced in the Introduction and then defined in-line to support reading fluency. A glossary assists students with essential terms.
- **Lesson Summaries** succinctly review main concepts.
- **The graphically organized notebook** helps students record and remember what they read.

Writing Accommodations

- Use highlighted handwriting paper to help with writing legibility
- Use flat marbles for multisensory finger spacing

- Use a sentence stem and have the student complete the stem
- Use a visual writing checklist so the student knows what is expected next in the lesson

Presentation Accommodations

- Use alternate texts at a lower readability level
- Work with fewer items per page or line and/or materials in a larger print size
- Use a magnification device, screen reader, or Braille / Nemeth Code
- Use audio amplification device (e.g., hearing aid(s), auditory trainer, sound-field system (teacher use of microphone))
- Be given a written list of instructions
- Be given an outline of a lesson
- Be given a copy of the teacher's notes
- Be given an example to assist in preparing for assessments
- Use visual presentations of verbal material, such as word webs and visual organizers
- Use manipulatives to teach or demonstrate concepts

Response Accommodations

- Use sign language, a communication device, Braille, other technology, or a native language other than English
- Dictate answers to a scribe
- Capture responses on an audio recorder
- Use a spelling dictionary or electronic spell-checker
- Use a word processor to type notes or give responses in class

Setting Accommodations

- Work or take a test in a different setting, such as a quiet room with few distractions
- Sit where he learns best (for example, near the teacher & away from distractions)
- Use special lighting or acoustics
- Take a test in a small group setting
- Sensory tools such as an exercise band looped around chair's legs (fidgety kids can kick it and quietly get their energy out)
- Use noise buffers such as headphones, earphones, or earplugs

Timing Accommodations

- Take more time to complete a task or a test
- Have extra time to process oral information and directions
- Take frequent breaks such as after completing a task

Scheduling Accommodations

- Take more time to complete a project
- Take a test in several timed sessions or over several days
- Take sections of a test in a different order
- Take a test at a specific time of day

Organization Skills Accommodations

- Use an alarm to help with time management
- Mark texts with a highlighter

Assignment Modifications

- Answer fewer or different test questions
- Create alternate projects or assignments

Curriculum Modifications

- Learn different material (such as continuing to work on the core skill such as an opening sentence, 3 detailed reasons, and a closing sentence, while others move ahead to an extension concept/skill)
- Get graded or assessed using a different standard than the one for a classmate

Differentiate Instruction by:

ELA/ELD Support for IEPs, at-risk, MLL (ELL/ESL), Enriched G&T

TCI's commitment to universal access—and our fundamental belief that all children can learn—is shown in these support features.

1. ELA/ELD Connections

Support students who need additional guidance and structure with reading, writing, or vocabulary development with ELA/ELD Connections. Make these toolkits available to your students as an independent tutorial, for class instruction, or for use with peer tutoring. Learn more about **Strategies for Integrating Language Arts**.

- **ELA/ELD Connections: Reading Skills**
- **ELA/ELD Connections: Writing Skills**
- **ELA/ELD Connections: Speaking and Listening Toolkit**
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Suggestions for how to use these pages are provided at point-of-use throughout the Lesson Guides.

2. Differentiating Instruction

Lesson Guides include step-by-step suggestions for meeting the needs of English Learners, students below grade level in reading and writing, special education (plus G&T) students, and advanced learners within the context of whole class instruction and with minimal modifications needed on the teacher's part. For more support, see **Best Practices for Differentiating Instruction**.

3. Reading Support

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- chosen to support the text, and captions that incorporate main ideas. Learn more about **Considerate Text features**
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- **Lesson Summaries** succinctly review main concepts.
- **The graphically organized notebook** helps students record and remember what they read.

Informational and literary texts are balanced with at least 50% of reading time devoted to expository texts.

4. Graphic Organizer Toolkit

Use the graphic organizers in this **toolkit** when students need support processing information. These organizers are flexible visual aids that help students map concepts, organize thoughts, and identify relationships between abstract ideas.

This toolkit includes:

- Venn diagrams
- Sequence chains
- Prediction/inference diagrams
- Decision trees
- Webs, timelines, and more

Differentiate Instruction by 504:

TCI's commitment to universal access—and our fundamental belief that all children can learn—is shown in these support features.

1. ELA/ELD Connections

Support students who need additional guidance and structure with reading, writing, or vocabulary development with ELA/ELD Connections. Make these toolkits available to your students as an independent tutorial, for class instruction, or for use with peer tutoring. Learn more about **Strategies for Integrating Language Arts**.

- **ELA/ELD Connections: Reading Skills**
- **ELA/ELD Connections: Writing Skills**
- **ELA/ELD Connections: Speaking and Listening Toolkit**
- **ELA/ELD Connections: Vocabulary Skills**

Suggestions for how to use these pages are provided at point-of-use throughout the Lesson Guides.

- Webs, timelines, and more

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