Subject Area: Science
Grade Level: K

Unit 1: Plants and Animals

Dates: September - October	**Time Frame:** 8 Weeks

Overview

Students are introduced to the unit's anchoring phenomenon of how beavers change land and water. Students find out that sometimes animals have nowhere to go. Students create a space for animals to live in a fictional park where they discover what animals need to live and thrive. Students investigate how people can take care of Earth as they find out how the choices people make can reduce their impacts on the land, water, air, and other living things. Using what they know about what plants, animals, and people need to live and grow, can students identify the many ways beavers change land and water to meet their needs?

Essential Questions	**Enduring Understandings**
• What do plants need? • What do animals need? • What do people need? • Where are plants and animals found? • How do plants and animals change Earth? • How do people change the earth? • How can people take care of the earth?	• Plants need water and light to live and grow. • All animals need food to live and grow. • Animals (including humans) obtain their food from plants or other animals. • Living things need water, air, and resources from the land, • Plants and animals can change their environment. • Things that people do to live comfortably can affect the world around them. • People can make choices to reduce their impacts on the land, water, air, and other living things.

Skill and Knowledge Objectives

SWBAT:

- Understand that plants need water and light to live and grow
- Learn that animals need food to live and grow. Animals obtain their food from plants or other animals.
- Collect and interpret data from the media about the food people get from four different farms.
- Observe patterns in the ways people get the food they need.
- Sort food by whether it comes from plants or animals.
- Use picture cards to model the connections between plants and animals and the places where they live.
- Learn how plants and animals can change Earth
- Understand that things people do can affect the world around them.

Assessments

- Unit 1 Lesson 1
- Unit 1 Lesson 2
- Unit 1 Lesson 3
- Unit 1 Lesson 4
- Unit 1 Lesson 5
- Unit 1 Lesson 6
- Unit 1 Lesson 7

Benchmark: TCI

Formative Assessments

Investigation

- The discussion questions in each section provide ample opportunities for formative assessment. Throughout the investigation, use student answers to the built-in discussion questions to gauge their three-dimensional learning. Typically, you can assess as a class, but you may wish to have individual students record their answers to certain questions. Use the +/- buttons to compare student answers to suggested answers. (Note that you shouldn't use suggested answers as a "script," but rather as a way to gauge student progress.) In the same way, use the Hint and Sample Answer buttons in the slideshows to drive the investigations forward and assess student understanding.
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Students can self-assess by using the Check for Understanding in their account. You should gather qualitative data by asking questions as students use the tutorials or project the tutorials and have students share their thinking.

Vocabulary Cards

Using the vocabulary flip cards in their subscriptions, you can assess students' grasp of key vocabulary terms in the lesson. You can have students self-assess by testing themselves or each other, or you can use the flip cards as part of a whole-class review game. For terms that students are struggling with, use one of the Vocabulary Development pages found in the Literacy Support info bar at the top of the Table of Contents.

Lesson Games

You can assign students the Lesson Game. In your gradebook, quantitative results are provided on both an individual student level and a whole-class level. Use the data to adjust your final activities and review of the lesson. For questions missed that use key vocabulary terms, use the Vocabulary Development pages. Use the Science and Engineering Practices or Crosscutting Concepts pages found in Other Resources for questions missed with SEP or CCC elements.

Summative Assessments

Lesson Assessments

Use the TCI Test for each lesson to assess the lesson objectives summatively. But also use these three-dimensional tests to formatively assess student progress toward the unit's targeted performance expectation(s) that will be assessed in the unit Performance Assessment. Use the quantitative data provided in your Gradebook to evaluate the progress of individual students or "view trends" to see whole-class data to know what to reteach.

Unit Progress (KWL Chart and Developing a Model to Explain a Phenomenon)

Finally, after the lesson, make sure students have added new three-dimensional knowledge to their unit KWL charts, noting topics they have a firm grasp on and others that you may need to return to or expand upon. Students should have been connecting their learning throughout the lesson's investigations to the unit's anchoring phenomenon, but give them time to reflect with a group about how their three-dimensional learning is helping them make sense of the anchoring phenomenon, revise their models, and ask questions of what else they need to know to more fully make sense of the anchoring

phenomenon.

Resources

- Video Library
- Games Library
- My Notes
- Glossary
- Biographies
- Career Profiles
- Pacing Guide
- Assessments

Standards including 9.2 Life Literacies and Key Skills 21st Century

Performance Expectation

K-LS1-1 Use observations to describe patterns of what plants and animals (including humans) need to survive. K-ESS3-1 Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.
K-ESS2-2 Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.
K-ESS3-3 Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.
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

- **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.**
- **Communicate information or design ideas and/or solutions with others in oral and/or written forms using models, drawings, writing, or numbers that provide detail about scientific ideas, practices, and/or design ideas.**
- **Read and comprehend grade-appropriate complex texts and/or other reliable media to summarize and obtain scientific and technical ideas and describe how they are supported by evidence.**

Engaging in Argument from Evidence

- **Construct an argument with evidence to support a claim.**
- **Listen actively to arguments to indicate agreement or disagreement based on evidence, and/or to retell the main points of the argument.**

Using Mathematics and Computational Thinking

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

- Use quantitative data to compare two alternative solutions to a problem.

Analyzing and Interpreting Data

- 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.

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).
- Distinguish between a model and the actual object, process, and/or events the model represents.
- Develop a simple model based on evidence to represent a proposed object or tool.

Constructing Explanations and Designing Solutions

- Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena.
- Generate and/or compare multiple solutions to a problem.

Crosscutting Concepts

Patterns

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

Systems and System Models

- Systems in the natural and designed world have parts that work together.

Cause and Effect

- Events have causes that generate observable patterns.

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).

Energy and Matter

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

Stability and Change

- 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).

Disciplinary Core Ideas

LS1.C: Organization for Matter and Energy Flow in Organisms

- All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow.

ESS3.A: Natural Resources

- Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do.

ESS2.E: Biogeology

- Plants and animals can change their environment.

ESS3.C: Human Impacts on Earth Systems

- Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things.

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.

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.

• 9.4.2.CT.2: Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3).

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.

<u>Complete NGSS Correlations</u>

ELA Standards

Reading

Read emergent-reader texts with purpose and understanding.

- CC.K.R.F.4 Read emergent-reader texts with purpose and understanding.

Writing

Research to Build and Present Knowledge

- CC.K.W.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).

Text Types and Purposes

- **CC.K.W.1 Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book (e.g., My favorite book is . . .).**
- **CC.K.W.2 Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.**

Speaking and Listening

Comprehension and Collaboration

- **CC.K.SL.2 Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.**

Presentation of Knowledge and Ideas

- **CC.K.SL.4 Describe familiar people, places, things, and events and, with prompting and support, provide additional detail.**
- **CC.K.SL.6 Speak audibly and express thoughts, feelings, and ideas clearly.**
- **CC.K.SL.5 Add drawings or other visual displays to descriptions as desired to provide additional detail.**

Math Standards

MD. Describe and compare measurable attributes

- **CC.K.MD.2.Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. For example, directly compare the heights of two children and describe one child as taller/shorter.**

Unit 1- Plants and Animals				
Lesson 1: What Do Plants Need? Lesson 1 Guide **Materials**: • Notebook Answer Key **Print** • Picture Cards A-H • Reading	**Lesson 2**: What Do Animals Need? Lesson 2 Guide **Materials**: **Print** • Picture Cards A-F • Reading Notes Answer Key • Science	**Lesson 3**: What Do People Need? Lesson 3 Guide **Materials**: **Activities**: • Scissors • Stapler **Print** • Audio Transcripts	**Lesson 4**: Where Are Plants and Animals Found? Lesson 4 Guide **Materials**: • Markers, assorted colors • Yarn **Print**	**Lesson 5**: How Do Plants and Animals Change Earth? Lesson 5 Guide **Materials**: • Index card • Scissors • String • Tape, transparent **Print**

Notes Answer Key • Science Journal • Spanish: Picture Cards A-H • Spanish: Science Journal • Super Simple Science • Teacher's Guide **Activities**: **Observing Phenomena** Students consider how much and how often different plants need water. **Investigation** Students visit a virtual garden center where they analyze and compare data on plant needs to choose a plant for the class. **Making Sense of Phenomena** As a class, discuss how students can use what they have learned to explain the Lesson Phenomenon: *Some plants need more water. Some need less water.* • How much water do the potted plants need? • How much water do the crops	Journal • Spanish: Picture Cards A-F • Spanish: Science Journal • Super Simple Science • Teacher's Guide **Activities**: **Observing Phenomena** Students consider what pets need to survive. **Investigation** Students tour an animal shelter to analyze the needs of different animals and choose a class pet. **Making Sense of Phenomena** As a class, discuss how students can use what they have learned to explain the Lesson Phenomenon: *Cats eat food and drink water, like humans.* • What is the cat on the left doing? • What is the cat on the right doing? **Video Lesson Extension**: Super Simple Science- Ducks find their own food. How do other wild animals find food?	• Handout: Tour Books • Reading Notes Answer Key • Science Journal • Spanish Handout: Tour Books • Spanish: Science Journal • Super Simple Science • Teacher's Guide **Observing Phenomena** Students think about why they eat and how often they eat. **Investigation** Students tour four farms to find out where foods come from, then sort foods by whether they come from plants or animals. **Making Sense of Phenomena** As a class, discuss how students can use what they have learned to explain the Lesson Phenomenon: *People eat food and drink water many times a day.* • Why do people eat food? Why do people drink water? **Video Lesson Extension**: Super	• Picture Cards A-H • Reading Notes Answer Key • Science Journal • Spanish: Picture Cards A-H • Spanish: Science Journal • Super Simple Science • Teacher's Guide **Activities**: **Observing Phenomena** Students consider animals that live in water, near water, and in the air. **Investigation** Students use picture cards to model what food animals eat and connect plants and animals to their habitats. **Making Sense of Phenomena** As a class, discuss how students can use what they have learned to explain the Lesson Phenomenon: *Some animals live under water. Some animals live above water.* • How do ducks get what they need above water? • How do fish	• Handout: Beaver Pictures • Handout: Sentence Strips • Reading Notes Answer Key • Science Journal • Spanish Handout: Beaver Pictures • Spanish Handout: Sentence Strips • Spanish: Science Journal • Super Simple Science • Teacher's Guide **Activities**: **Observing Phenomena** Students consider how weeds can change a sidewalk and other ways plants and animals change Earth. **Investigation** Students make a virtual visit to a beaver pond and locate evidence of beavers changing Earth. **Making Sense of Phenomena** As a class, discuss how students can use what they have learned to explain the Lesson Phenomenon: *This*

need? **Video Lesson Extension**: Super Simple Science- A cactus holds water. Animals stay away. How does a cactus save water?		Simple Science- A sheep's wool keeps it warm. What do sheep need to live?	get what they need under water? **Video Lesson Extension**: Super Simple Science- A log is a place for many living things. What lives in a log?	*room is covered in spider webs.* • How do spiders change an attic? • Why do you think spiders spin their webs? **Video Lesson Extension**: Super Simple Science- Squirrels dig holes and hide nuts. Where are the nuts hidden?
Lesson 6: How Do People Change Earth? Lesson 6 Guide **Materials**: **Activities**: **Observing Phenomena** Students think about ways they have seen people change Earth, such as pollution and cutting down trees. **Investigation** Students examine pros and cons and then decide whether to build a new playground in their neighborhood. **Making Sense of Phenomena** As a class, discuss how students can use what they have learned to explain the Lesson Phenomenon: *People sometimes cut down trees.*	**Lesson 7**: How Can People Take Care of Earth? Lesson 7 Guide **Materials**: • Aluminum foil, roll • Bag, plastic, 4" x 4" • Balloon • Bowl, plastic, 6 qt • Cornstarch • Cup, 9 oz • Flour • Newspaper • Paint brush, 1" • Paper towels • Spoon, plastic mixing • Strainer • Water, boiling • Water, tap **Print** • Picture Cards A-B • Reading Notes Answer Key			

• How are humans changing Earth? • What will happen to the animals that live in the tree? **Video Lesson Extension**: Super Simple Science- Paper comes from wood. What other things are made from wood?	• Science Journal • Spanish: Picture Cards A-B • Spanish: Science Journal • Super Simple Science • Teacher's Guide **Activities**: **Observing Phenomena** Students consider what they do with trash and whether they recycle. **Investigation** Students discuss how to reduce paper waste. They reuse newspapers to design a papier-mâché object. **Making Sense of Phenomena**: As a class, discuss how students can use what they have learned to explain the Lesson Phenomenon: *Trash is collected and put in piles.* • Why is the girl sorting trash? • Is the girl taking care of Earth? **Video Lesson Extension**: Super Simple Science- A new playground mat can be made			

	from old tires. What new thing can you make from an old thing?			

Differentiate Instruction by:

ELA/ELD Support

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
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- 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 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.

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- 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

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

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Differentiate Instruction by 504, if applicable: extended time, fewer choices, select seating

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- Webs, timelines, and more

Subject Area: Science
Grade Level: K

Unit 2: Pushes and Pulls

Dates: January- February	**Time Frame:** 7-8 weeks

Overview

Students are introduced to the unit's anchoring phenomenon of how they move in different ways on the playground. Performing investigations and simple tests, students explore the relationship between forces and motion and discover how things move through pushes and pulls, and what happens when objects bump. Students also explore how people design things that move. Can students use what they know to build a marble playground?

Essential Questions	**Enduring Understandings**
• How do things move?	• Pushing or pulling on an object can change

• What do pushes and pulls do? • How do pushes and pulls move things? • What happens when objects bump? • How do people design things that move?	the speed or direction of its motion and can start or stop it. • When objects touch or collide, they push on one another and can change motion

Skill and Knowledge Objectives

SWBAT:

- Describe motion using words and gestures to describe a speed and a direction.
- Share ideas about what can cause a wagon to move, then investigate what happens when they push or pull a box wagon. They ask questions about the direction and speed of pushes and pulls and investigate answers by applying and comparing different kinds of pushes and pulls.
- Learn how a push or a pull affects the direction of an object's motion. Students practice using pushes and pulls to affect a ball's speed and direction. They sit in a circle and push or pull a ball. They note the effect on a ball when they push it away or pull it toward them.
- Read about how a bump (a push) can cause an object to change speed or direction.
- Learn about how people design things that change the speed or direction of an object.

Assessments

- Unit 2 Lesson 1
- Unit 2 Lesson 2
- Unit 2 Lesson 3
- Unit 2 Lesson 4
- Unit 2 Lesson 5

Benchmark: TCI

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Investigation

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Standards including 9.4 Life Literacies and Key Skills 21st Century

Next Generation Science Standards

Performance Expectation

K-PS2-1 Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.

K-PS2-2 Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.

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.

Science and Engineering Practices

Planning and Carrying Out Investigations

- With guidance, plan and conduct an investigation in collaboration with peers.
- 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.
- Make predictions about what would happen if a variable changes.

Analyzing and Interpreting Data

- Analyze data from tests of an object or tool to determine if it works as intended.

- Compare predictions (based on prior experiences) to what occurred (observable events).

Obtaining, Evaluating, and Communicating Information

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

Constructing Explanations and Designing Solutions

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

Asking Questions and Defining Problems

- 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).
- Ask and/or identify questions that can be answered by an investigation.

Developing and Using Models

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

Engaging in Argument from Evidence

- Distinguish between opinions and evidence in one's explanations.

Crosscutting Concepts

Cause and Effect

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

Structure and Function

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

Systems and System Models

- Systems in the natural and designed world have parts that work together.

Disciplinary Core Ideas

PS2.A: Forces and Motion

- Pushes and pulls can have different strengths and directions.
- Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it.

PS3.C: Relationship Between Energy and Forces

- A bigger push or pull makes things go faster.

PS2.B: Types of Interactions

- When objects touch or collide, they push on one another and can change motion.

ETS1.A: Defining and Delimiting Engineering Problems

- A situation that people want to change or create can be approached as a problem to be solved through engineering. Such problems may have many acceptable solutions.

Connections to the Nature of Science

Scientific Investigations Use a Variety of Methods

- Scientists use different ways to study the world.

• 9.4.2.CI.1: Demonstrate openness to new ideas and perspectives (e.g., 1.1.2.CR1a, 2.1.2.EH.1, 6.1.2.CivicsCM.2).

Complete NGSS Correlations

ELA Standards

Reading

Read emergent-reader texts with purpose and understanding.

- CC.K.R.F.4 Read emergent-reader texts with purpose and understanding.

Writing

Text Types and Purposes

- CC.K.W.2 Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.

Speaking and Listening

Comprehension and Collaboration

- CC.K.SL.3 Ask and answer questions to seek help, get information, or clarify something that is not understood.
- CC.K.SL.2 Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.

Math Standards

Math

MD. Describe and compare measurable attributes

- CC.K.MD.1.Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
- CC.K.MD.2.Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. For example, directly compare the heights of two children and describe one child as taller/shorter.

Unit 2- Pushes and Pulls				
Lesson 1: How Do Things Move? Lesson 1 Guide **Materials**: • Crayons, assorted colors • Scissors **Print**	**Lesson 2**: What Do Pushes and Pulls Do? Lesson 2 Guide **Materials**: • Box, cardboard (3.5" x 3.5" x 1.5") • Glue **(SDS)**	**Lesson 3**: How Do Pushes and Pulls Move Things? Lesson 3 Guide **Materials**: • Ball, kick • Chip, counting • Index card	**Lesson 4**: What Happens When Objects Bump? Lesson 4 Guide **Materials**: • Cardboard, corrugated, 30 cm x 30 cm	**Lesson 5**: How Do People Design Things that Move? Lesson 5 Guide **Materials**: • Cardboard, corrugated, 30 cm x 30 cm

• **Extension Handout** • **Picture Card A** • **Reading Notes Answer Key** • **Science Journal** • **Spanish: Picture Card A** • **Spanish: Science Journal** • **Super Simple Science** • **Teacher's Guide** **Activities**: **Observing Phenomena** Students explore how things move at different speeds and in different directions by observing and trying swings at the park. **Investigation** Students move their bodies in different directions, following along to the words of the "Way to Go" song. **Making Sense of Phenomena** As a class, discuss how students can use what they have learned to explain the Lesson Phenomenon: *Swings can move*	• Gravel • Pipe cleaner • Scissors **Print** • **Extension Handout** • **Handout: Push-Pull Cards** • **Reading Notes Answer Key** • **Science Journal** • **Spanish Handout: Push-Pull Cards** • **Spanish: Science Journal** • **Super Simple Science** • **Teacher's Guide** **Activities**: **Observing Phenomena** A ball starts moving when you kick it. **Investigation** You will observe what happens when you push and pull a box wagon. You will ask your own “What if” questions and find answers using your wagon. You will push or pull two wagons and find out why one of the wagons is harder to push or pull. **Making Sense of Phenomena** You will act out a scene in which you push or pull	• Markers, assorted colors **Print** • Picture Card A • Reading Notes Answer Key • Science Journal • Spanish: Picture Card A • Spanish: Science Journal • Super Simple Science • Teacher's Guide **Activities**: **Observing Phenomena** 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. **Investigation** You will play a game in which you push a ball in different directions and start and stop the ball from moving. You will use arrows to show how the ball moves. You will predict and then test how the ball will move when pushed in different directions. **Making Sense of Phenomena**	• Chip, counting • Craft stick • Cup, plastic • Tube, cardboard **Print** • Extension Handout • Reading Notes Answer Key • Science Journal • Spanish: Science Journal • Super Simple Science • Teacher's Guide **Activities**: **Observing Phenomena** 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. **Investigation** You will find out what happens when you push a chip so it bumps into a wall, another chip, and a tower. Then you will conduct your own investigation. **Making Sense of Phenomena** You will make up and play a game that involves objects bumping into each other.	• Chip, counting • Clay, modeling, 4 colors • Craft stick • Glue **(SDS)** • Index card • Pipe cleaner • Sticker **Print** • **Extension Handout** • **Reading Notes Answer Key** • **Science Journal** • **Spanish: Science Journal** • **Super Simple Science** • **Teacher's Guide** **Activities**: **Observing Phenomena** 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. **Investigation** You will explore how ramps make things move. You will design slides and test them to see if they are safe. **Making Sense of Phenomena** You will predict how a chip will go down a slide.

back and forth. • What is the opposite direction of forward? • What is the opposite direction of up? **Video Lesson Extension**: Super Simple Science- A cheetah runs fast! What are ways other animals move	something. The class will guess what you are doing. Then you will sort pictures that show pushes and pulls. **Video Lesson Extension**: Super Simple Science- Kicks can move a ball. Hands can stop it. What are some ways you can move a ball?	You will write about how a toy train might move. **Video Lesson Extension**: Super Simple Science- Machines can move things. What kind of mover can you make?	**Video Lesson Extension**: Super Simple Science- Air hockey is played on a table. A puck gets pushed and bumped. How can you make a hockey table game?	**Video Lesson Extension**: Super Simple Science- Someone invented a zipper. It uses a pull. What thing that moves can you invent?

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 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

ELA 504 accommodations: more time, fewer choices, select seating

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Subject Area: Science
Grade Level: K

Unit 3: Weather

Dates: May - June	**Time Frame:** 6-8 weeks

Overview

Students are introduced to the unit's anchoring phenomenon of weather not being the same everywhere. This unit is grouped into two main concepts. In the first half of the unit, students explore how to identify different types of weather and the factors that contribute to weather. In the second half of the unit, students take a look at severe weather and understand how to plan for it. Students discover how weather forecasts let us know what kind of weather is coming. Students also examine what the weather is like where they live. Using what they know about weather, how should students plan, prepare, and keep safe in the event of a storm?

Essential Questions	**Enduring Understandings**
• What is the weather? • When does the weather change? • What keeps the earth warm?	• Weather is the combination of sunlight, wind, snow or rain, and temperature. • Weather patterns change over time. • Sunlight warms Earth's surface.

• How can people stay cool in hot weather? • What makes storms on Earth? • How can people prepare for storms?	• Some kinds of severe weather are more likely than others in a given region.

Skill and Knowledge Objectives

SWBAT:

- Examine the concept that weather is not the same everywhere as they examine different places.
- Understand that weather is not the same everywhere and can change slowly or quickly.
- Understand the role the sun plays in weather.
- Examine how to deal with sunny, hot weather.
- Relate to their region's severe weather events.
- Find out about storm forecasts and understand how to prepare for severe weather.

Assessments

- **Unit 3 Lesson 1**
- **Unit 3 Lesson 2**
- **Unit 3 Lesson 3**
- **Unit 3 Lesson 4**
- **Unit 3 Lesson 5**
- **Unit 3 Lesson 6**

Benchmark: TCI

Formative Assessments

Investigation

- The discussion questions in each section provide ample opportunities for formative assessment. Throughout the investigation, use student answers to the built-in discussion questions to gauge their three-dimensional learning. Typically, you can assess as a class, but you may wish to have individual students record their answers for certain questions. Use the +/- buttons to compare student answers to suggested answers. (Note that you shouldn't use suggested answers as a "script," but rather as a way to gauge student progress.) In the same way, use the Hint and Sample Answer buttons in the slideshows to drive the investigations forward and assess student understanding.
- Interactive slides provide opportunities for formative assessment before or after an investigation. These slides are often "drag and drop" or "graphing" slides that allow students to interact with the presentation and share what they have learned or hypothesize. You may wish to have individual students or groups of students come to the computer, interact with the slide, and then ask someone else if they agree or have a different hypothesis. These assessments can prompt rich classroom discussion and identify any holes in the learning.
- The Wrap Up at the end of the investigation should always be used for formative assessment. The questions are purposefully written to assess the three-dimensional objectives that have been

taught throughout the investigation. Have students answer the questions in their notebooks, as exit tickets, or using your strategy of choice. You may wish to have students first brainstorm answers with a partner for some questions—reflecting on the investigation together—before writing their answers. If students struggle to answer the questions three-dimensionally, have them review their investigation prompts in their Interactive Student Notebooks and/or read the sections of Student Text connected to the investigation (as noted in the Suggested Reading buttons).

Student Journal

- As students complete the investigation notes in print or online, circulate around the room, looking for evidence of a three-dimensional understanding of the lesson objectives and NGSS elements used during the investigation. Use the Answer Key (that has suggested answers and rubrics when applicable) to support the analysis of student answers. If students struggle with SEP elements, use the handouts in the SEP Toolkit buttons or the Science and Engineering Practices pages for more practice.
- As students complete the reading section prompts in their Interactive Student Notebooks, use the Answer Key to assess their answers and adjust instruction to address misconceptions or inaccuracies. If you notice students are struggling with the reading, allow them to use the text-to-speech feature online so they can follow along as the text is read, along with the Main Ideas feature to highlight the key concepts in the text (you can turn off these features for students who don't need them). Then have students retry the section prompts or select a few questions from the Question Bank to reassess their progress. (Note that the Question Bank includes the Notebook and Lesson Game questions so that you can easily give them as an assessment or modify them.)

Check for Understanding

Students can self-assess by using the Check for Understanding in their account. You should gather qualitative data by asking questions as students use the tutorials or project the tutorials and have students share their thinking.

Vocabulary Cards

Using the vocabulary flip cards in their subscriptions, you can assess students' grasp of key vocabulary terms in the lesson. You can have students self-assess by testing themselves or each other, or you can use the flip cards as part of a whole-class review game. For terms that students are struggling with, use one of the Vocabulary Development pages found in the Literacy Support info bar at the top of the Table of Contents.

Lesson Games

You can assign students the Lesson Game. In your gradebook, quantitative results are provided on both an individual student level and a whole-class level. Use the data to adjust your final activities and review of the lesson. For questions missed that use key vocabulary terms, use the Vocabulary Development pages. Use the Science and Engineering Practices or Crosscutting Concepts pages found in Other Resources for questions missed with SEP or CCC elements.

Summative Assessments

Lesson Assessments

Use the TCI Test for each lesson to assess the lesson objectives summatively. But also use these three-dimensional tests to formatively assess student progress toward the unit's targeted performance expectation(s) that will be assessed in the unit Performance Assessment. Use the quantitative data provided in your Gradebook to evaluate the progress of individual students or "view trends" to see whole-class data to know what to reteach.

Unit Progress (KWL Chart and Developing a Model to Explain a Phenomenon)

Finally, after the lesson, make sure students have added new three-dimensional knowledge to their unit KWL charts, noting topics they have a firm grasp on and others that you may need to return to or expand upon. Students should have been connecting their learning throughout the lesson's investigations to the unit's anchoring phenomenon, but give them time to reflect with a group about how their three-dimensional learning is helping them make sense of the anchoring phenomenon, revise their models, and ask questions of what else they need to know to more fully make sense of the anchoring phenomenon.

Resources

- Video Library
- Games Library
- My Notes
- Glossary
- Biographies
- Career Profiles
- Pacing Guide
- Assessments

Standards including 9.4 Life Literacies and Key Skills 21st Century

Next Generation Science Standards

Performance Expectation

K-ESS2-1 Use and share observations of local weather conditions to describe patterns over time.
K-ESS3-2 Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather. **K-PS3-1** Make observations to determine the effect of sunlight on Earth's surface.
K-PS3-2 Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.
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-ETS1-1 Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
K-2-ETS1-2 Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

Science and Engineering Practices

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.

- 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).

Using Mathematics and Computational Thinking

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

Analyzing and Interpreting Data

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

Asking Questions and Defining Problems

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

Planning and Carrying Out Investigations

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

Constructing Explanations and Designing Solutions

- Use tools and/or materials to design and/or build a device that solves a specific problem or a solution to a specific problem.
- Generate and/or compare multiple solutions to a problem.

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.

Developing and Using Models

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

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

- Some things stay the same while other things change.

Cause and Effect

- Events have causes that generate observable patterns.

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).

• 9.4.2.CT.2: Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3).

• 9.4.2.CI.1: Demonstrate openness to new ideas and perspectives (e.g., 1.1.2.CR1a, 2.1.2.EH.1, 6.1.2.CivicsCM.2).

Disciplinary Core Ideas

ESS2.D: Weather and Climate

- Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time.

ESS3.B: Natural Hazards

- Some kinds of severe weather are more likely than others in a given region. Weather scientists forecast severe weather so that the communities can prepare for and respond to these events.

PS3.B: Conservation of Energy and Energy Transfer

- Sunlight warms Earth's surface.

ETS1.A: Defining and Delimiting Engineering Problems

- Asking questions, making observations, and gathering information are helpful in thinking about problems.
- Before beginning to design a solution, it is important to clearly understand the problem.
- 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.C: Optimizing the Design Solution

- Because there is always more than one possible solution to a problem, it is useful to compare and test designs.

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.

Scientific Investigations Use a Variety of Methods

- Scientists use different ways to study the world.

Connections to Engineering, Technology, and Applications of Science

Interdependence of Science, Engineering, and Technology

- People encounter questions about the natural world every day.

Complete NGSS Correlations

ELA Standards

Reading

Key Ideas and Details

- CC.K.R.I.1 With prompting and support, ask and answer questions about key details in a text.

Writing

Research to Build and Present Knowledge

- CC.K.W.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them).

Text Types and Purposes

- CC.K.W.3 Use a combination of drawing, dictating, and writing to narrate a single event or several loosely linked events, tell about the events in the order in which they occurred, and provide a reaction to what happened.

Speaking and Listening

Comprehension and Collaboration

- CC.K.SL.3 Ask and answer questions to seek help, get information, or clarify something that is not understood.
- CC.K.SL.1 Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.

Math Standards

Math

MD.Describe and compare measurable attributes

- CC.K.MD.1.Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
- CC.K.MD.2.Directly compare two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute, and describe the difference. For example, directly compare the heights of two children and describe one child as taller/shorter.

MD.Classify objects and count the number of objects in each category

- CC.K.MD.3.Classify objects into given categories; count the numbers of objects in each category and sort the categories by count. (Limit category counts to be less than or equal to 10.)

Unit Name/Theme				
Lesson 1: What is Weather? Lesson 1 Guide **Materials**: **Print** • Extension Handout • Handout: Cue Cards • Reading Notes Answer Key • Science	**Lesson 2**: When Does Weather Change? Lesson 2 Guide **Materials**: • Glue **(SDS)** • Scissors **Print** • Handout: Weather Symbols • Reading Notes	**Lesson 3**: What Keeps Earth Warm? Lesson 3 Guide **Materials**: • Apron, vinyl • Cup, 9 oz • Gloves, safety • Gravel • Sand, medium **(SDS)** • Soil	**Lesson 4**: How Can People Stay Cool in Hot Weather? Lesson 4 Guide **Materials**: • Aluminum foil, roll • Clay, modeling, 4 colors • Cloth, cotton	**Lesson 5**: What Makes Storms on Earth? Lesson 5 Guide **Materials**: • Paper, construction, assorted colors • Paper, white • Stapler **Print** • Audio

Journal • Spanish Handout: Cue Cards • Spanish: Science Journal • Super Simple Science • Teacher's Guide **Activities**: **Observing Phenomena** What are the different types of weather that you have seen outside? **Investigation** You will watch videos of the weather in different places. You and your group will prepare and deliver a weather report for one of the places. **Making Sense of Phenomena** You will show what you know by drawing a picture of the weather and using weather words to describe it. **Video Lesson Extension:** Super Simple Science- Sun and rain makes a rainbow. The sky has many colors. What colors do you see in the sky?	Answer Key • Science Journal • Spanish Handout: Weather Symbols • Spanish: Science Journal • Teacher's Guide **Activities**: **Observing Phenomena** Has the weather ever changed from being sunny to stormy quickly? **Investigation** You will keep track of the weather each day on a calendar. You will study the calendar and tell what it shows. **Making Sense of Phenomena** You will show how the weather changes. **Video Lesson Extension:** Super Simple Science- Bears spend winter in a den. They keep warm. How can you make a den to keep warm?	• Water **Print** • Reading Notes Answer Key • Science Journal • Spanish: Science Journal • Super Simple Science • Teacher's Guide **Activities**: **Observing Phenomena** Have you ever seen snow on a tree in the morning? Was there less of it in the afternoon? **Investigation** You will test sand, rock, soil, or water in the sun and in the shade to see if sunlight makes them warmer. **Making Sense of Phenomena** Then, you will write a story about what happens to a snowman when the sun shines on it. **Video Lesson Extension:** Super Simple Science- Mars is cold. It is far away from the sun. How does something feel when it is far from the sun?	• Craft stick • Hole punch • Petri dish • Pipe cleaner • Plates, paper • Sand, medium **(SDS)** • Scissors • Stir Stick • String • Tape, transparent • Tube, cardboard **Print** • Reading Notes Answer Key • Science Journal • Spanish: Science Journal • Super Simple Science • Teacher's Guide **Activities**: **Observing Phenomena** Have you ever seen someone using an umbrella on a sunny day? Why do you think someone would use an umbrella on a sunny day? **Investigation** You and a partner will design a structure to keep a sandbox cool. You will make a model of your structure, and you will test it to see if it keeps sand cool. **Making Sense of Phenomena**	Transcript • Reading Notes Answer Key • Science Journal • Spanish: Science Journal • Super Simple Science • Teacher's Guide **Activities**: **Observing Phenomena** Have you ever been in a storm? Where was it? **Investigation** You will write a story about a storm you experienced. You will ask your family questions about the storm. You will share your story with classmates. **Making Sense of Phenomena** You will show what you know by putting the events in a storm story in order. **Video Lesson Extension:** Super Simple Science-Hurricane Sandy was windy. Tornadoes are windy too. They can blow down trees. How does a tornado blow objects around?

			Then, you will design a shade maker to keep puppies cool in hot weather. **Video Lesson Extension:** Super Simple Science- Clay bricks keep a hut cool. They are made from clay and straw. How can you make bricks from soil?	
Lesson 6: How Can People Prepare for Storms? Lesson 6 Guide **Materials**: • Glue **(SDS)** • Scissors **Print** • Handout: Store Supplies • Reading Notes Answer Key • Science Journal • Spanish Handout: Store Supplies • Spanish: Science Journal • Super Simple Science Teacher's Guide **Activities**: **Observing Phenomena** Have you ever seen a video of a tornado?				

Was the damage bad? **Investigation** You will prepare for a storm by creating a supply kit. You will watch a storm forecast. Then you will check your supply kit to see if you are ready for the storm. **Making Sense of Phenomena** You will cut and paste pictures to make your own storm kit. **Video Lesson Extension:** Super Simple Science- Pets need to be safe in storms. How can you make a storm kit for a pet?				

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3. Reading Support

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- 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

ELA 504 accommodations: extended time, fewer choices, select seating

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 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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