

# Kindergarten Science

## Link Community Charter School

UNITS (4/4 SELECTED)

- Unit 1: Trees and Weather
- Unit 2: Materials and Motion
- Unit 3: Animals Two by Two
- Unit 4: iSTEAM Scientist Challenge

SUGGESTED DURATION

*40 lessons*

*50 lessons*

*50 lessons*

*20 lessons*

# Unit 1: Trees and Weather

Kindergarten Science - Last Updated on August 6, 2021

## STANDARDS ADDRESSED

### Next Generation Science (NGSS) - Kindergarten

K-LS1-1.

K-ESS2-2.

K-ESS2-1.

K-ESS3-1.

K-ESS3-2.

K-PS3-1.

K-2-ETS1-2.

# Unit 1: Trees and Weather

Kindergarten Science - Last Updated on August 6, 2021

## DESIRED RESULTS

### Established Goals

Readjusted from the recommended FOSS Kindergarten scope and sequence to allow for students to capitalize on opportunities for students to investigate trees and weather at the onset of fall, this eight to nine-week unit entitled "Trees and Weather" gives students a better understanding of the impact trees have on the world. Students come to understand what plants and animals need in order to survive, and how plants and animals interact in an ecosystem. Most importantly, students begin to identify as scientists as they explore the natural world and take note of observations made about trees and weather. The unit culminates with a two-week curricular inquiry around students' interests, wonderings, and lingering questions.

### Transfer

Students will be able to independently use their learning to...

(1) identify as "young scientists," observing weather and the natural environment, (2) engage in future science and engineering practices, and (3) apply their understanding and new learning to other crosscutting concepts.

### Meaning

#### Big Ideas & Understandings

Students will understand that...

- Trees are living plants with structures that include branches, leaves, trunk, and roots.

#### Essential Questions

Students will keep considering...

- Why are trees so important to our community?
- What makes a tree a tree?
- How are leaves the same and different?
- What is weather, where does it happen, and how does it affect us?
- How do trees change through the seasons? How do trees change their surroundings?

### Acquisition

#### Knowledge

#### Skills

# Unit 1: Trees and Weather

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## Acquisition

Students will know...

- LINK's Core Value of "Following Directions" is a core component of participating in a science class.
- that trees and living things make up the world around us.
- the properties of trees and leaves
- how to take care of plants in the classroom
- trees change throughout each year and through each season.
- vocabulary words related to trees and plants
- that trees and plants are important in our community.

Students will be skilled at...

- Developing a growing curiosity and interest in the living things that make up their world.
- Observe and describe the properties of trees and leaves in the schoolyard.
- Compare the similarities and differences of the trees and leaves observed on mini-field trips.
- Help plant and care for a tree temporarily in the classroom, then permanently in the schoolyard.
- Observe trees throughout the school year for changes that come with the different seasons.
- Compare the shapes of leaves to geometric shapes.
- Compare the size and edges of leaves, using a reference card.
- Use pictorial experiences to heighten their awareness of the diversity and variety of trees and leaves.
- Acquire the vocabulary associated with the properties and structures of trees and leaves.
- Use drawings and oral language to describe observations

# Unit 1: Trees and Weather

Kindergarten Science - Last Updated on August 6, 2021

## ASSESSMENT EVIDENCE (DIAGNOSTIC / FORMATIVE / SUMMATIVE)

### Assessments

Evaluation Criteria	Assessment Evidence
Rubrics/Checklists:	Performance Task(s):
	Other Evidence:

## LEARNING PLAN

### Summary of Key Learning Events and Instruction:

Week 1- Becoming a Scientist

Investigation 1-Observing Trees

Investigation 2-Observing Leaves

Investigation 3-Observing Weather

Investigation 4-Trees Through the Seasons

# Unit 1: Trees and Weather

Kindergarten Science - Last Updated on August 6, 2021

## SUPPORTING MATERIALS/RESOURCES/STRATEGIES FOR DIFFERENTIATION

Trees and Weather Overview Document- [Click Here](#)

### Science Resource Books

- *Where Do Trees Grow?*
- *What Do Plants Need?*
- *Up in the Sky*
- *Weather*
- *My Apple Tree*
- *Orange Trees*
- *Maple Trees*

### Books

- *How Do We Learn?*
- *Our Very Own Tree*

### Science Posters and Story

- "A Tree Comes to Class"

### Science Videos

- Once There Was a Tree
- Come a Tide
- Once There Was a Tree Summer

### Online Activities

- Leaf Sorting
- Who Lives Here?

### Supporting Materials

Investigations #1-4 include a set of Focus Questions that stem back to the phenomenon. These questions can be used to guide and focus student learning, while connecting to previous concepts learned.

### Supplemental Resources

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## Unit 2: Materials and Motion

Kindergarten Science - Last Updated on August 6, 2021

### STANDARDS ADDRESSED

#### Next Generation Science (NGSS) - Kindergarten

K-PS2-1.

K-PS2-2.

K-PS3-1.

K-PS3-2.

K-ESS3-3.

K-2-ETS1-1.

K-2-ETS1-2.

K-2-ETS1-3.

# Unit 2: Materials and Motion

Kindergarten Science - Last Updated on August 6, 2021

## DESIRED RESULTS

### Established Goals

In this ten to eleven-week hands-on unit, Kindergartners engage in a study of "Materials and Motion" by investigating the anchor phenomenon that objects are made of materials---wood, paper, and fabric---and how material properties determine their use. Students come to understand that humans use natural resources for everything they do and that people have an impact on the world around them. The unit culminates with a two-week curricular inquiry around students' interests, wonderings, and lingering questions.

### Transfer

Students will be able to independently use their learning to...

- (1) identify as "young scientists," working with materials
- (2) engage in future science and engineering practices, and
- (3) apply their understanding and new learning to other crosscutting concepts.

### Meaning

#### Big Ideas & Understandings

Students will understand that...

- Wood, paper, and fabric can all be described in terms of their properties.
- Different kinds of wood come from different kinds of trees and people make paper from wood.
- Some kinds of wood are processed and made by people.
- Basic materials like wood and paper can be recycled and transformed into new materials.
- Land, air, water, and trees are natural resources.
- The sun warms the Earth's surface.
- An engineer is a person who designs and tests solutions to problems.
- Motion involves pushes and pulls (including gravity).

#### Essential Questions

Students will keep considering...

- What in our world is made of wood and what properties make wood useful?
- What in our world is made of paper and what properties make paper useful?
- What in our world is made of fabric and what properties make fabric useful?
- How can we use materials in engineering a structure?
- How can we change the motion of an object?



## Unit 2: Materials and Motion

Kindergarten Science - Last Updated on August 6, 2021

Acquisition	
Knowledge	Skills
<p>Students will know...</p> <ul style="list-style-type: none"> <li>• LINK's Core Value of "Following Directions" is a core component of participating in a science class.</li> <li>• Anyone can identify as a scientist and engage in questioning, observing, and wondering.</li> <li>• Scientists organize their ideas and collect information, or data, in field journals/notebooks.</li> <li>• Trees are natural resources.</li> <li>• Wood floats in water but can be made to sink under certain circumstances.</li> <li>• Wood can be changed by sanding and mixing with water.</li> <li>• Sawdust is tiny wood pieces that can be recycled.</li> <li>• A push or pull can change the direction of an object.</li> <li>• Gravity pulls things down.</li> </ul> <p>Key Vocabulary:</p> <p>Wood Terminology</p> <p>basswood, grain, layer, particleboard, pine, plywood, redwood, rough, smooth, texture, wood, absorb, float, sink, soak, spread, test, weight, basswood, evaporate, property, raft, sandpaper, sawdust</p> <p>Paper Terminology</p> <p>chipboard, construction, corrugated, corrugated cardboard, facial tissue, newsprint, paper towel, tagboard, waxed, bumpy, slick, tear, bend, corner, crease, flat, fold, half, thick, thin,, drop, dropper, submerge, paper mache, wax paper, wheat pasta, recycling, pulp</p> <p>Fabric Terminology</p> <p>burlap, cloth, conserve, corduroy, denim, fabric, fleece, hot, knit, magnet, natural resource, nubby,</p>	<p>Students will be skilled at...</p> <p><b>Wood:</b></p> <ul style="list-style-type: none"> <li>• Working with five different wood samples to observe their properties</li> <li>• Conducting free exploration</li> <li>• Going on a hunt for matching samples</li> <li>• Testing wood to find out how many paper clips it takes to sink it</li> <li>• Organizing results and data by making a concrete graph.</li> <li>• Using sandpaper to change the shape of wood.</li> <li>• Comparing sawdust and shavings and how they interact with water.</li> <li>• Simulating the manufacturing of two kinds of wood- particleboard and plywood.</li> <li>• Making detailed observations of different types of wood</li> <li>• Communicating observations to peers</li> <li>• Applying an understanding of wood's properties to authentic scenarios</li> </ul> <p><b>Paper:</b></p> <ul style="list-style-type: none"> <li>• Observing and comparing the properties of ten different kinds of papers.</li> <li>• Comparing how well the papers fold and which has the best surface for writing.</li> <li>• Testing papers for absorption</li> <li>• Communicating observations to peers</li> <li>• Applying understanding of paper's properties to authentic scenarios</li> </ul> <p><b>Fabric:</b></p>

## Unit 2: Materials and Motion

Kindergarten Science - Last Updated on August 6, 2021

### Acquisition

recycle, reuse, ripstop nylon, satin, seersucker, slippery, soak, sparkle organza, structure, temperature, terry cloth, thread, warp, waterproof, woof, woven

#### Motion Terminology

cause, collide, collision, direction, distance, effect, fast, gentle, gravity, motion, move, pull, push, rocket, roll, rolling, ramp, slope, slowly, speed, strength, stop

- Observing and comparing the properties of ten kinds of fabric
- Explaining the different ways fabrics are used.
- Taking apart fabrics to learn how they are woven from threads.
- Investigating how fabrics interact with water.
- Distinguishing the properties of different fabrics in order to decide which fabrics are good choices for clothing.
- Planning how they can conserve, reuse, and recycle.
- Observing the warming effect of the sun and design a structure to reduce the effect of heating.

#### Motion:

- Investigating the strength of pushes and pulls needed to move objects.
- Using gravity to pull balls down slopes to investigate collisions.
- Exploring ways to change the strength and direction of the pull on a rolling ball to meet design challenges.
- Adjusting the strength of the push on a balloon rocket flying on a line to explore cause and effect.

## Unit 2: Materials and Motion

Kindergarten Science - Last Updated on August 6, 2021

ASSESSMENT EVIDENCE (DIAGNOSTIC / FORMATIVE / SUMMATIVE)

### Assessments

Evaluation Criteria	Assessment Evidence
Rubrics/Checklists:	Performance Task(s):
	Other Evidence: <ul style="list-style-type: none"><li>• Teacher Observation</li><li>• Science Notebook Completion</li><li>• Class Participation</li></ul>

## Unit 2: Materials and Motion

Kindergarten Science - Last Updated on August 6, 2021

### LEARNING PLAN

#### Summary of Key Learning Events and Instruction:

##### Investigation 1: Getting to Know Wood

- Observing Wood
- Wood and Water
- Testing a Raft
- Sanding Wood
- Sawdust and Shavings
- Making Particleboard
- Making Plywood

##### Investigation 2: Getting to Know Paper

- Paper Hunt
- Using Paper
- Paper and Water
- Paper Recycling
- Paper-Mache

##### Investigation 3: Getting to Know Fabric

- Feely Boxes and Fabric Hunt
- Taking Fabric Apart
- Water and Fabric
- Graphing Fabric Uses
- Reuse and Recycle Resources
- Building Structures

##### Investigation 4: Getting Things to Move

- Pushes and Pulls
- Colliding Objects
- Rolling Outdoors
- Balloon Rockets

Curricular Inquiry (approximately 2 Weeks)

## Unit 2: Materials and Motion

Kindergarten Science - Last Updated on August 6, 2021

### SUPPORTING MATERIALS/RESOURCES/STRATEGIES FOR DIFFERENTIATION

**Materials and Motion Overview Document- [Click Here](#)**

#### Science Resource Books

- *The Story of A Chair*
- *Are You an Engineer?*
- *The Story of a Box*
- *What is Fabric Made From?*
- *How Are Fabrics Used?*
- *Land, Air, and Water*
- *I Am Wood*
- *Pushes and Pulls*
- *Collisions*

#### Science Videos

- What is Agriculture?
- Environmental Health
- Clothing & Building Materials

#### Online Activities

- Where is Wood?
- Weave a Pattern
- Recycling Center
- Roller Coaster Builder

#### Supporting Materials

Investigations #1-4 include a set of Focus Questions that stem back to the phenomenon. These questions can be used to guide and focus student learning, while connecting to previous concepts learned.

#### Supplemental Resources

- *Floating and Sinking* by Honey Andersen
- *Wood* by Kate McGough
- *Would You Believe It* by Catherine Chambers
- BrainPOP Jr.: [Sink or Float](#)
- Scholastic Reader
- *Paper, Paper, Everywhere* by Gail Gibbons
- *Around the World* by Margaret Hall

## Unit 3: Animals Two by Two

Kindergarten Science - Last Updated on August 12, 2021

### STANDARDS ADDRESSED

#### Next Generation Science (NGSS) - Kindergarten

K-LS1-1.

K-ESS2-2.

K-ESS3-1.

# Unit 3: Animals Two by Two

Kindergarten Science - Last Updated on August 12, 2021

## DESIRED RESULTS

### Established Goals

In this ten to eleven-week FOSS unit, students engage in approximately 50 lessons centered around close and personal interaction with some common land and water animals. Animals and their survival needs are the engaging anchor phenomena, which students study by observing and describing animal structures. Students learn to respect living things as they observe and take care of a classroom habitat. Similar to the first two science units, this unit culminates with a two-week curricular inquiry around students' interests, wonderings, and lingering questions.

### Transfer

Students will be able to independently use their learning to (1) identify as "young scientists," working with materials (2) engage in future science and engineering practices, and (3) apply their understanding and new learning to other crosscutting concepts.

### Meaning

#### Big Ideas & Understandings

- Students will understand that...
- Animals have basic needs and observable structures
  - Different kinds of animals (including fish, birds, snails, worms, and isopods) have similar but different structures and behaviors
  - Snails are animals that have basic needs-water, air, food, space, and shelter
  - There is great diversity among different animal groups (including snails)
  - Conditions in the environment can affect animal behavior.

#### Essential Questions

- Students will keep considering...
- What do animals such as fish and birds need to live and grow?
  - What do animals such as snails need to live and grow?
  - What do animals such as worms need to live and grow?
  - What do animals such as isopods need to live and grow?

## Unit 3: Animals Two by Two

Kindergarten Science - Last Updated on August 12, 2021

- Fish are animals that have basic needs.
- Fish have structures that help them live and grow.
- Different kinds of fish have similar but different structures and behaviors.
- Birds are animals that have basic needs.
- Different kinds of birds have similar but different structures and behaviors.
- Different kinds of snails have some structures and behaviors that are the same and some that are different.
- Snails are animals and have basic needs: water, air, food, and space with shelter.
- There is great diversity among snails.
- Shells differ in size, shape, pattern, and texture.
- Snails have senses.
- Worms are animals and have basic needs.
- Worms have identifiable structures.
- Different kinds of worms have similar structures and behaviors; they also have differences (size, color).
- Worm behavior is influenced by conditions in the environment.
- Worms change plant material into soil.
- Isopods are animals and have basic needs: water, air, food, and space with shelter.
- Different kinds of isopods have some structures and behaviors that are the same and some that are different.
- There is great diversity among isopods.
- Isopod behavior is influenced by conditions in the environment.
- Key Vocabulary: animal, aquarium, bill, bird, feather, female, fin, fish, fly, food, freshwater, gill,

Students will be skilled at...

- Observing the structures and behaviors of fish, snails, worms, and isopods.
- Observing an animal ecosystem and taking care of the basic needs of the animal.
- Comparing the structures and behaviors of one type of fish to other kinds of fish (eg. goldfish, guppies)
- Comparing photos of fish and reading to learn about fish.
- Observing animals in the local school community (eg. birds)
- Constructing worm jar habitats.
- Comparing red worms to nightcrawlers.
- Observing how the worms change the plant material into soil.
- Comparing photos and reading about worms and their activities in soil.
- Observing structures of two kinds of isopods.
- Identifying which are pill bugs and which are sow bugs.
- Designing isopod races.
- Creating a terrarium in which all the land animals live together.
- Comparing photos and reading about isopods.
- Comparing illustrations of a variety of animals.
- Explaining the differences between living and nonliving things.



## Unit 3: Animals Two by Two

Kindergarten Science - Last Updated on August 12, 2021

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goldfish, guppy, male, mouth, plant, prefer, scale, swim, tail, tunnel, water, wing, dark, float, foot, land snail, large, light, rough, sea animal, shell, sideways, small, smooth, tentacle, terrarium, upside down, vial, water snail, body, bristle, clitellum, earthworm, moist, nightcrawler, red worm, segment, soil, swollen, top, antenna, ball, carapace, flat, isopod, jagged, living, moisture, nonliving, pill bug, protect, race, roll up, round, section, sow bug, turn over	

### ASSESSMENT EVIDENCE (DIAGNOSTIC / FORMATIVE / SUMMATIVE)

## Assessments

Evaluation Criteria	Assessment Evidence
Rubrics/Checklists:	Performance Task(s):
	Other Evidence: <ul style="list-style-type: none"><li>• Teacher Observation</li><li>• Science Notebook Completion</li><li>• Class Participation</li></ul>

# Unit 3: Animals Two by Two

Kindergarten Science - Last Updated on August 12, 2021

## LEARNING PLAN

### Summary of Key Learning Events and Instruction:

#### Investigation 1: Goldfish and Guppies

- The Structure of Goldfish
- Caring for Goldfish
- Goldfish Behavior
- Comparing Guppies to Goldfish
- Comparing Schoolyard Birds

#### Investigation 2: Water and Land Snails

- Observing Water Snails
- Shells
- Land Snails

#### Investigation 3: Big and Little Worms

- The Structure of Redworms
- Redworm Behavior
- Comparing Redworms to Nightcrawlers

#### Investigation 4: Pill Bugs and Sow Bugs

- Isopod Observations
- Identifying Isopods
- Isopod Movement
- Animals Living Together

Curricular Inquiry (approximately 2 Weeks)

## Unit 3: Animals Two by Two

Kindergarten Science - Last Updated on August 12, 2021

### SUPPORTING MATERIALS/RESOURCES/STRATEGIES FOR DIFFERENTIATION

**Animals Two by Two Overview Document-** [Click Here](#)

#### Science Resource Books

- *Fish Same and Different*
- *Fish Live in Many Places*
- *Birds Outdoors*
- *Water and Land Snails*
- *Worms in Soil*
- *Isopods*
- *Animals All Around Us*
- *Living and Nonliving*

#### Book

- *Animals Two by Two*

#### Science Videos

- The Urban Habitat of Peregrine Falcons in *Is This a House for a Hermit Crab?*
- Seashore Surprises

#### Online Activities

- Find the Parent

#### Supporting Materials

Investigations #1-4 include a set of Focus Questions that stem back to the phenomenon. These questions can be used to guide and focus student learning, while connecting to previous concepts learned.

#### Supplemental Resources

- Wonderopolis Articles:
  - ["Do Fish Sleep With Their Eyes Open?"](#)
  - ["How Many Birds Can You Identify?"](#)
  - ["Why Do Snails Leave Slime Trails?"](#)
  - ["Why Are Earthworms Good for Gardens?"](#)

# Unit 4: iSTEAM Scientist Challenge

Kindergarten Science - Last Updated on August 5, 2021

STANDARDS ADDRESSED

DESIRED RESULTS

ASSESSMENT EVIDENCE (DIAGNOSTIC / FORMATIVE / SUMMATIVE)

LEARNING PLAN

SUPPORTING MATERIALS/RESOURCES/STRATEGIES FOR DIFFERENTIATION