

Title: Materials and Motion

Grade: Kindergarten

Length: 3-4 weeks per investigation

Investigation 1: Fabric (Materials)

Enduring Understandings:

- Fabrics are examples of solid material.
- Solid objects are made of solid material.
- Solid objects have properties.
- Fabrics can be changed by coloring.
- Common materials can be changed into new materials (weaving, knitting).

Investigation 2: Getting Things to Move (Motion)

- Pushes and pulls can have different strengths and directions.
- Pushing and pulling on an object can change the speed and direction of its motion and can start and stop it.
- A bigger push or pull makes things go faster.
- When objects touch or collide, they push on one another and can change motion.

**Standards to be addressed:
NGSS, CCSS ELA, CCSS Math**

K-PS1-2 Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

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 pull.

K-PS3-1 Make observations to determine the effect sunlight on earth's surfaces.

K-PS3-3 Communicate solutions that will reduce the impact of humans on the land, water, air and/or 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.

K-2-ETS1-3 Analyze data from tests to two objects designed to solve the same problem to compare strengths and weaknesses of of each perform.

CCCS ELA

SL1: Participate in collaborative conversations.

SL3: Ask and answer questions to seek help, information, or clarity.

SL4: Describe with details.

RF2: Demonstrate understanding of spoken words, syllables, and sounds.

L5a: Sort common objects into categories.

W5: Strengthen writing.

W8: Gather information to answer a question.

RI1: Ask and answer questions about key details.

RI2: Identify main topic and retell key ideas.

RI3: Describe the connection between two ideas.

RI7: Describe the relationship between the illustration and text.

RI8: Identify the reasons an author gives to support points.

RI9: Identify similarities in and differences between two texts on the same topic.

RI10: Actively engage in group reading activities with purpose and understanding.

CCCS Math

CC4: Understand the relationship between numbers and quantities

CC5: connect counting to cardinality

OT2: solve addition and subtraction word problems.

MD2: Directly compare two objects with a measurable attribute in common.

MD3: Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.

Essential Questions:

What provocative questions will foster inquiry, understanding, and transfer learning? What questions can you use to connect this unit to Cross-Cutting Concepts?

Investigation 1: Fabric (Materials)

- How are fabrics different?
- What is made of fabric?
- How is fabric made?
- What happens when water gets on fabric?
- How are different kinds of fabric used?
- How can we conserve natural resources?
- What happens to water in sunshine and shade?
- How can we design a structure to keep water cool in sunshine?

Investigation 2: Getting Things to Move (Motion)

- What causes objects to move?
- What happens when objects collide?
- Where can balls roll on the school yard?
- How can we change how far a balloon rocket travels?

<p>Disciplinary Core Ideas:</p> <p><u>Investigation 1: Fabric (Materials)</u> PS1: How can one explain the structure, properties and interaction of matter? PS1. A : Structure/ properties of matter PS3 : How is energy transferred and conserved? PS3.B : Conservation of energy and energy transfer ESS3 : How do Earth’s surface processes and human activities affect each other. ESS3. A: Natural Resources ESS3.C: Humans impact on Earth</p>	<p>Scientific & Engineering Practices:</p> <p><u>Investigation 1: Fabric (Materials)</u> Asking questions/ defining problems Developing and using models Planning/carrying out investigations Analyzing and interpreting data Using mathematical and computational thinking Constructing explanations and designing solutions Engaging in argument from evidence Obtaining, evaluating, and communicating</p>	<p>Crosscutting Concepts:</p> <p><u>Investigation 1: Fabric (Materials)</u></p> <ul style="list-style-type: none">● Patterns● Cause and effect● Structure and functions
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ETS1: How do engineers solve problems?
ETS1.A Defining engineering problems
ETS1.B Developing possible solutions
ETS1.C Optimizing designs solutions

Investigation 2: Getting Things to Move (Motion)

PS2: How can one explain and predict interactions between objects and within system objects?

PS2.A: Forces and motions
PS2.B Types of interactions

PS3: How is energy transferred and conserved?

PS3.C: Relationships between energy and forces

ETS1: How do engineers solve problems?
ETS1.A: Defining and eliminating problems
ETS1.B: Developing possible solutions
ETS1.C: Optimizing the design solution

information

Investigation 2: Getting Things to Move (Motion)

Asking questions/ defining problems
Planning/carrying out investigations
Analyzing and interpreting data
Using mathematical and computational thinking
Constructing explanations and designing solutions
Obtaining, evaluating, and communicating information

Investigation 2: Getting Things to Move (Motion)

- Patterns
- Cause and effect
- Scale, proportions and quantity
- Systems and system models

Big Ideas-I want students to understand:

What scientific explanations and/or models are critical for student understanding of the content?

So what? Who cares?

What is the most important for students to understand about this topic?

Investigation 1: Fabric (Materials)

How are fabrics different? Fabrics can be can look and feel different.

What is made of fabric? ____ is made of fabric. (ie clothes are made out of fabric)

How is fabric made? Fabric is made from _____. (ie Fabric is made from woven threads.)

What happens when water gets on fabric? On fabric, water sometimes repels or absorbs.

How are different kinds of fabric used? _____ fabric is used to make _____.

How can we conserve natural resources? We can recycle ____ to save natural resources.

What happens to water in sunshine and shade? Experiment with basins of water outside in sun and shade; compare which is warm/cool. Discuss and share findings.

How can we design a structure to keep water cool in sunshine? Students create shades for basins; which work to keep water cool? Which do nothing?

Investigation 2: Getting Things to Move (Motion)

What causes objects to move? ____ causes objects to move.

What happens when objects collide? The objects _____. One object _____ the other.

Where can balls roll on the school yard? Students explore movement of balls on school yard. (balls roll on slopes/hills, large balls roll straighter)

How can we change how far a balloon rocket travels? To make a balloon rocket travel farthest, we _____.

Do-I want students to be able to:

What scientific practices will we explicitly focus on in this unit?

What key knowledge and skills will students develop as a result of this unit?

(Use verb phrases)

Investigation 1: Fabric (Materials)

Observe the properties of 10 different fabrics.

Match properties by using feely boxes, hunting for fabric and locating fabric in the classroom.

Investigate the structure of woven fabrics by disassembling and comparing loose and tight fabrics.

Investigate how fabrics interact with water. Observe how water absorbs, transmits

and repels water.

Think about fabrics for clothing. Graph fabrics that would make best kind of clothing

Introduce students to natural resources and the need to recycle. Collect and sort materials for recycling.

Compare bins of water in shade and sun. Design a structure to keep water cool in sunshine.

Scientific Practices

Plan and carry out investigations

Analyze and interpret data

Ask questions

Develop and use models

Construct explanations and design solutions

Obtain, evaluate and communicate information

Use mathematical computational thinking

Engage in argument/explanation

Define problems

Investigation 2: Getting Things to Move (Motion)

Observe and describe how a push/pull causes something to move.

Roll balls at different speeds.

Explore what happens when a ball is rolled at different speeds.

Determine strength of a push. Introduce and explore pull of gravity.

Use balls and ramps to achieve different speeds.

Explore what happens when a ball hits an object. Use knowledge to make a ball land in a specific place.

Explore schoolyard for slopes. Make predictions for path of a ball on a slope.

Observe a balloon rocket system to find out how far it go. Investigate how more air in balloon changes the speed of rocket and how far it will travel. Observe what happens when system collides with an object in flight.

Scientific Practices

Plan and carry out investigations

Analyze and interpret data

Ask questions

Develop and use models

Construct explanations and design solutions

Obtain, evaluate and communicate information

Use mathematical computational thinking

Engage in argument/explanation

Define problems

Know-What are the basics?:

What vocabulary formations or other facts do students need to know in order to understand the big ideas?

Investigation 1: Fabric (Materials) ~ Vocabulary Words ~ Burlap, cloth, cold, conserve, corduroy, denim, fabric, fleece, hot, knit, least, magnet, most, natural resources, nubby, recycle, reuse, ripstop nylon, rough, satin, scratchy, seersucker, shiny, slippery, smooth, soak, soft, sparkly organza, structure, temperature, terry cloth, texture, thread, warp, waterproof, wool, woven

Investigation 2: Getting Things to Move (Motion)

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

How do I reinforce or build literacy or mathematics skills?

Investigation 1: Fabric (Materials)

Literacy Skills: Teachers will use literary resources such as charts, word webs, vocabulary word wall, labels, big books, interactive journals and class discussions.

Math Skills: Teachers will use activities such as sorting, comparing, classifying, graphing, counting, analyzing and interpreting data.

Investigation 2: Getting Things to Move (Motion)

Literacy Skills: Teachers will use literary resources such as charts, word webs, vocabulary word wall, labels, big books, interactive journals and class discussions.

Math Skills: Teachers will use activities such as sorting, comparing, classifying, graphing, counting, analyzing and interpreting data.

Assessment: How will I know what students have learned?

Performance Expectations:

Does the formative or summative assessment require students to show their understanding in an observable way?

Does it make students' thinking visible?

Are there criteria and are the criteria relevant to the big ideas for the unit?

Other evidence:

Include multiple types of learning to give a more accurate picture of learning.

Investigation 1: Fabric (Materials)

Students work in small collaborative groups to observe and discuss properties of 10 kinds of fabric, investigate loose/tight fabrics, explore water interaction of fabrics, think about and graph different fabrics for clothing; on-going student interactive notebook documentation, assessment checklists (found in teacher resource book), observation, conversation throughout lessons/activities..

Investigation 2: Getting Things to Move (Motion)

Students work in small collaborative groups to observe and discuss how objects move, explore schoolyard for places that balls will roll, use knowledge of the motion of rolling objects to solve a problem, observe balloon rocket system to find out how it works; on-going student interactive notebook documentation, assessment checklists (found in teacher resource book), observation, conversation throughout lessons/activities.

What some ways we could possibly differentiate instruction to reach all learners?

How shall we teach for understanding?

Incorporate different learning styles as well hands-on and engaging activities?

Teachers will provide additional visuals, gestures, sentence frames, charts with icons, use songs and poems to support different learning styles. Students will work with partners and in small groups.

Title: Animals Two By Two

Grade: K

Length: 2-3 weeks per investigation

Enduring Understandings:

Animals have identifiable structures and behaviors.

Animals have basic needs.

Standards to be addressed:

NGSS, CCSS ELA, CCSS Math

NGSS

LS1.A: Structure and function

Land animals need air, water, food, and space with shelter.

Water animals need the appropriate kind of water, oxygen from the water, food, and space with shelter.

Adult animals and plants can have offspring.

A habitat is a place where animals live and their needs are met. There are many different kinds of habitats.

Animals eat plants and other animals.

Living things can survive only where their needs are met.

Organisms can change their environment.

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.

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.

ESS2.E: Biogeology

Plants and animals can change their environment. **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.

CCSS ELA

RI 1: Ask and answer questions about key details.

RI 2: Identify main topic and retell key details.

RI 3: Describe the connection between two ideas.

RI 4: Ask and answer questions about unknown words.

RI 5: Identify the front cover, back cover, and title page of a book.

RI 6: Name and define the role of the author and illustrator. RI

7: Describe the relationship

between illustrations and the text. RI 8: Identify the reasons an author gives to support points. RI 9: Identify similarities in and differences between two texts on the same topic.

RI 10: Actively engage in group reading activities with purpose and understanding.

W 5: Strengthen writing.

W 8: Gather information to answer a question.

SL 1: Participate in collaborative conversations.

SL 2: Ask and answer questions about key details and request clarification.

SL 3: Ask and answer questions to seek help, information, or to clarify.

SL 4: Describe with details.

L 5a: Sort objects into categories.

CCSS Math

CC 4: Understand the relationship between numbers and quantities; connect counting to cardinality

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.

Essential Questions:

What provocative questions will foster inquiry, understanding, and transfer learning? What questions can you use to connect this unit to Cross-Cutting Concepts?

Investigation 1: Goldfish and Guppies

What are the parts of a goldfish?

What do goldfish need to live?
 What do goldfish do?
 How are guppies and goldfish different?
 How are they the same?
 What birds visit our schoolyard?

Investigation 2: Pill Bugs and Sow Bugs

What are isopods?
 How are pill bugs and sow bugs different?
 How are they the same? How do isopods move?
 What do animals need to live?

<p>Disciplinary Core Ideas:</p> <p><u>Investigation 1:</u> LS1: How do organisms live, grow, respond to their environment, reproduce? LS1.A: Structure and function LS1.C: Organization for matter and energy flow in organisms ESS2: How and why is Earth constantly changing? ESS2.E: Biogeology ESS3: Earth and human activity ESS3.A Natural resources</p> <p><u>Investigation 2:</u> LS1: How do organisms live, grow, respond to their environment, reproduce? LS1.A: Structure and function LS1.C: Organization for matter and energy flow in organisms</p>	<p>Scientific & Engineering Practices:</p> <p><u>Investigation 1:</u> Asking questions Developing and using models Planning and carrying out investigations Analyzing and interpreting data Constructing explanations Obtaining, evaluating, and communicating information</p> <p><u>Investigation 2:</u> Asking questions Planning and carrying out investigations Analyzing and interpreting data Constructing explanations Obtaining, evaluating, and communicating</p>	<p>Crosscutting Concepts:</p> <p><u>Investigation 1:</u> Patterns Cause and effect Systems and system models Structure and function</p> <p><u>Investigation 2:</u> Patterns Cause and effect Systems and system models Structure and function</p>
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<p>ESS2: How and why is Earth constantly changing? ESS2.E: Biogeology</p> <p>ESS3: Earth and human activity ESS3.A Natural resources</p>	<p>information</p>	
<p>Big Ideas-I want students to understand:</p> <p><i>What scientific explanations and/or models are critical for student understanding of the content?</i> <i>So what? Who cares?</i> <i>What is the most important for students to understand about this topic?</i></p> <p><u>Investigation 1:</u> Goldfish and Guppies</p> <p>What are the parts of a goldfish? Goldfish have 2 eyes, one tail, six fins, one mouth, and scales.</p> <p>What do goldfish need to live? Goldfish need, food, clean water, and space with shelter.</p> <p>What do goldfish do? Goldfish swim all around. They find out about things with their mouth, nose, and body.</p> <p>How are guppies and goldfish different? Size, shape, tail, markings</p> <p>How are they the same? Swim, same needs, same basic body structure</p> <p>What birds visit our schoolyard? Identify local birds</p> <p><u>Investigation 2:</u> Pill Bugs and Sow Bugs</p> <p>What are isopods? Isopods are small animals with antennae, a hard carapace over their body, and 14 legs.</p> <p>How are pill bugs and sow bugs different? Round vs. flat, roll up vs. turn over, light vs. dark, long Vs. short antennae, tail vs. no tail</p> <p>How are they the same? Hard carapace, 14 legs, need moisture, eat potato or carrot</p> <p>How do isopods move? Isopods move quickly, in a straight line. They frequently stop and hide.</p> <p>What do animals need to live? Animals need food, water, space, and shelter.</p>		

Do-I want students to be able to:

What scientific practices will we explicitly focus on in this unit?

What key knowledge and skills will students develop as a result of this unit?

(Use verb phrases)

Investigation 1:

Observe goldfish, look for and name parts of the fish, record observations.

Care for fish by creating a healthy environment, sharing responsibilities with group.

Describe goldfish behavior.

Alter the aquarium environment and record changes in behavior.

Construct a model aquarium to be used to demonstrate fish behavior.

Compare structures and behaviors of different kinds of fish.

Identify fish by gender

Observe and compare local birds

SCIENTIFIC PRACTICES:

Ask questions

Develop and use models

Plan and carry out investigations

Analyze and interpret data

Construct explanations

Obtain, evaluate, and communicate information

Investigation 2:

Investigate structures and behaviors of isopods.

Compare and sort isopods.

Find and observe isopods in their natural environment.

Conduct isopod races as a means to observe movement.

Design and construct a terrarium with a group to observe how animals live together.

SCIENTIFIC PRACTICES:

Ask questions

Develop and use models

Plan and carry out investigations

Analyze and interpret data

Construct explanations

Obtain, evaluate, and communicate information

Know-What are the basics?:

What vocabulary formations or other facts do students need to know in order to understand the big ideas?

Investigation 1:

Vocabulary words: animal, aquarium, bill, bird, dirty, eye, female, fin, fish, fly, food, fresh water, gill, goldfish, guppy, head, male, mouth, plant, prefer, scale, surface, swim, tail, tunnel, water, wing

Positional words

Investigation 2:

Vocabulary words: antennae, ball, carapace, flat, isopod, jagged, living, moisture, nonliving, pill bug, protect, race, roll up, round, section, sow bug, turn over

How do I reinforce or build literacy or mathematics skills?

Investigation 1: Goldfish and Guppies

Literacy Skills: Teachers will use literary resources such as charts, word webs, vocabulary word wall, labels, big books, interactive journals and class discussions.

Math Skills: Teachers will use activities such as sorting, comparing, classifying, graphing, counting, analyzing and interpreting data.

Investigation 2: Pill bugs and Sow Bugs

Literacy Skills: Teachers will use literary resources such as charts, word webs, vocabulary word wall, labels, big books, interactive journals and class discussions.

Math Skills: Teachers will use activities such as sorting, comparing, classifying, graphing, counting, analyzing and interpreting data.

Assessment: How will I know what students have learned?

Performance Expectations:

Does the formative or summative assessment require students to show their understanding in an observable way?

Does it make students' thinking visible?

Are there criteria and are the criteria relevant to the big ideas for the unit?

Other evidence:

Include multiple types of learning to give a more accurate picture of learning.

Investigation 1:

Students will be working in small groups to observe and discuss the structures and behaviors of fish. They will collaborate to care for their fish. Teacher will check for understanding by monitoring on-going student interactive notebook documentation, assessment checklists (found in teacher resource book), observation of group work and interactions, conversation throughout lessons/activities.

Investigation 2:

Students will be working in small groups to observe and discuss the structures and behaviors of isopods. They will collaborate to create a habitat. Teacher will check for understanding by monitoring on-going student interactive notebook documentation, assessment checklists (found in teacher resource book), observation of group work and interactions, conversation throughout lessons/activities.

What some ways we could possibly differentiate instruction to reach all learners?

How shall we teach for understanding?

Incorporate different learning styles as well hands-on and engaging activities?

Teachers will provide additional visuals, gestures, sentence frames, charts with icons, use songs and poems to support different learning styles. Students will work with partners and in small groups.

Title: Trees and Weather

Grade: Kindergarten

Length: full year

Enduring Understandings:

- Trees are living plants and have structures.
- Plants have basic needs- water, light, nutrients , and space.
- Trees go through predictable stages through the seasons as the weather changes.
- Weather is the condition of the air outside; weather changes.
- Temperature is how hot or cold it is and can be measured with a thermometer.
- Wind is moving air; windsocks indicate direction and speed.

**Standards to be addressed:
NGSS, CCSS ELA, CCSS Math**

NGSS:

Life Sciences

K-LS1-1 Use observations to describe patterns of what plants and animal, including humans, need to survive.

Earth and Space Sciences

K-ESS2-1 Use and share observations of local weather conditions to describe patterns over time.

K-ESS2-1 Construct an argument supported by evidence for how plants and animal, including humans, can change the environment to meet their needs.

K-ESS3-1 Use a model to represent the relationship between the needs of different plants and animals, including humans, and the places they live.

K-ESS3-2 Ask questions to obtain information about the purpose of weather forecasting to prepare for and respond to severe weather.

Physical Science

K-PS3-1 Make observations to determine the effect of sunlight on Earth's surface.

Engineering, Technology, and Applications of Science

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.

CCCS ELA

SL1: Participate in collaborative conversations.

SL3: Ask and answer questions to seek help, information, or clarity.

SL4: Describe with details.

RF2: Demonstrate understanding of spoken words, syllables, and sounds.

L5a: Sort common objects into categories.

W5: Strengthen writing.

W8: Gather information to answer a question.

RI1: Ask and answer questions about key details.

RI2: Identify main topic and retell key ideas.

RI3: Describe the connection between two ideas.

RI7: Describe the relationship between the illustration and text.

RI8: Identify the reasons an author gives to support points.

RI9: Identify similarities in and differences between two texts on the same topic.

RI10: Actively engage in group reading activities with purpose and understanding.

CCCS Math

CC4: Understand the relationship between numbers and quantities; connect counting to cardinality.

MD2: Directly compare two objects with a measurable attribute in common.

MD3: Classify objects into given categories; count the numbers of objects in each category and sort the

	<p>categories by count. G1: Describe objects in the environment using names of shapes, and describe the relative positions of these objects.</p>
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Essential Questions:

What provocative questions will foster inquiry, understanding, and transfer learning? What questions can you use to connect this unit to Cross-Cutting Concepts?

Investigation 1: Observing Trees

- What did we notice about our schoolyard trees?
- What are the parts of trees?
- What shapes are trees?
- Which trees have similar shapes?
- What can we find out about our adopted trees?
- What do trees need to grow?

Investigation 2: Trees through the Seasons

- What do fall trees look like?
- What do winter trees look like?
- What do spring trees look like?

Investigation 3: Observing Weather

- What words can we use to describe weather today?
- How can we measure the air temperature?
- What does a wind sock tell us about the wind?

<p>Disciplinary Core Ideas:</p> <p><u>Investigation 1:</u> LS1: How do organisms live, grow and respond to their environment and reproduce? LS1.A Structure and function LS1.C Organization for matter and energy flow of organisms ESS2. How and why is</p>	<p>Scientific & Engineering Practices:</p> <p><u>Investigation 1:</u> Asking questions Developing and using models Planning and carrying out investigations Analyzing and interpreting data Constructing explanations Engaging in argument</p>	<p>Crosscutting Concepts:</p> <p><u>Investigation 1:</u></p> <ul style="list-style-type: none"> ● Patterns ● Systems and system models ● Structure and function
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<p>earth constantly changing? ESS2.E Biogeology ESS3. How do earth's surface processes and human activities affect each other. ESS3.A Natural Resources</p> <p><u>Investigation 2:</u> LS1: How do organisms live, grow and respond to their environment and reproduce. LS1.A Structure and function LS1.C Organization for matter and energy flow of organisms ESS2. How and why is earth constantly changing? ESS2.D Weather and climate LS1: How do organisms live, grow and respond to their environment and reproduce. ESS3.A Natural Resources</p> <p><u>Investigation 3:</u> ESS2. How and why is earth constantly changing? ESS2.D Weather and climate ESS3. How do earth's surface processes and human activities affect each other. ESS3.B Natural hazards PS3. How is energy transferred and conserved? PS3.B Conservation of</p>	<p>from evidence Obtaining, evaluating, and communicating information</p> <p><u>Investigation 2:</u> Planning and carrying out investigations Analyzing and interpreting data Constructing explanations Obtaining, evaluating, and communicating information</p> <p><u>Investigation 3:</u> Planning and carrying out investigations Analyzing and interpreting data Constructing explanations Obtaining, evaluating, and communicating information</p>	<p><u>Investigation 2:</u></p> <ul style="list-style-type: none"> ● Patterns ● Cause and Effect ● Stability and change <p><u>Investigation 3:</u></p> <ul style="list-style-type: none"> ● Patterns ● Cause and Effect ● Systems and system models
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energy and energy transfer
ETS1 How do engineers solve problems?
ETS1.B Developing possible solutions

Big Ideas-I want students to understand:

What scientific explanations and/or models are critical for student understanding of the content?

So what? Who cares?

What is the most important for students to understand about this topic?

Investigation 1:

What did we learn about our schoolyard trees? Trees have branches and leaves. Squirrels, birds, and other animals use trees for home for homes and food.

What are the parts of trees? Branches, leaves, roots and trunk

What shapes are trees? Round and short; thin and tall

Which trees have similar shapes? Some trees have points at top; some trees are round at the top

What can we find out about our adopted trees? Do the leaves fall off in winter? What happens to the tree in a storm?

What do trees need to grow? Trees need water, light, space and and nutrients from soil. The two most important are water and light.

Investigation 2:

What do fall trees look like? Leaves change colors. Some trees lose their leaves.

What do winter trees look like? Some trees are only branches. Some trees are evergreen.

What do spring trees look like? Trees have flowers and new leaves growing on their twigs and branches.

Investigation 3:

What is the weather today? Today the weather is ____.

How can we measure the air temperature? We use a thermometer to tell how hot/cold the air is.

What does a wind sock tell us about the wind? Wind sock shows the direction of the wind.

Do-I want students to be able to:

What scientific practices will we explicitly focus on in this unit?

*What key knowledge and skills will students develop as a result of this unit?
(Use verb phrases)*

Investigation 1:

Observe schoolyard trees, develop general concepts about trees and discuss how trees are useful to people and wild animals.

Identify the main parts of trees.

Compare different shapes of trees.

Document observations.

Discover and discuss what plants need to live and grow.

SCIENTIFIC PRACTICES:

Ask questions

Plan and carry out investigations

Analyze and interpret data

Engage in argument from evidence

Develop and use models

Construct explanations

Obtain, evaluate, communicate information

Investigation 2:

Collect and chart objects from trees.

Search for, observe, and compare seeds.

Observe bark, twigs, leaves, flowers, fruit, and seeds.

Observe the inside of trees and look for growth rings, buds, and leaf scars.

Observe and document changes through seasons.

Observe and compare bark.

Look for evidence of new growth.

SCIENTIFIC PRACTICES:

Plan and carry out investigations

Analyze and interpret data

Obtain, evaluate, communicate information

Construct explanations

Investigation 3:

Record daily weather observations.

Measure and record relative temperature.

Construct a windsock and observe how it responds when air moves through it.

SCIENTIFIC PRACTICES:

Plan and carry out investigations

Analyze and interpret data

Obtain, evaluate, communicate information

Construct explanations

Know-What are the basics?:

What vocabulary formations or other facts do students need to know in order to understand the big ideas?

Investigation 1: Vocabulary Words: adopt, bark, branch, circumference, compare, cone, conifer, desert, different, flower, hardwood, leaves, living, mountain, observe, ocean, pattern, plant, river, root, rubbing, seed, shape, similar, stem, swamp, texture, tree, trunk, twig, valley

Investigation 2: Vocabulary Words: blossom, bud, evergreen, fall, flower, food, forcing, fruit, growth ring, leaf scar, needle, scale, seasons, seed, spring, summer swollen, winter

Investigation 3: Vocabulary Words: air, blowing, calendar, cloud, cold, cool, directions, freezing, hot, moving air, overcast, partly cloudy, rainy, snowy, streamer, sunny, temperature thermometer, warm, weather, weather instrument, wind, windsock

How do I reinforce or build literacy or mathematics skills?

Investigation 1:

Literacy Skills: Teachers will use literary resources such as charts, word webs, vocabulary word wall, labels, big books, interactive journals and class discussions.

Math Skills: Teachers will use activities such as sorting, comparing, classifying, graphing, counting, analyzing and interpreting data.

Investigation 2: Literacy Skills: Teachers will use literary resources such as charts, word webs, vocabulary word wall, labels, big books, interactive journals, and class discussions.

Math Skills: Teachers will use activities such as sorting, comparing, classifying, graphing, counting, analyzing and interpreting data.

Investigation 3: Literacy Skills: Teachers will use literary resources such as charts, word webs, vocabulary word wall, labels, big books, interactive journals and class discussions.

Math Skills: Teachers will use activities such as sorting, comparing, classifying, graphing, counting, analyzing and interpreting data.

Assessment: How will I know what students have learned?

Performance Expectations:

Does the formative or summative assessment require students to show their understanding in an observable way?

Does it make students' thinking visible?

Are there criteria and are the criteria relevant to the big ideas for the unit?

Other evidence:

Include multiple types of learning to give a more accurate picture of learning.

Investigation 1: Collaborative group outdoor investigations; class participates in choosing a class tree to observe, care for and document seasonal changes through the year; labeling tree parts; identifying trees, sorting and classifying types of leaves and trees; student documentation of tree observations through the the seasons in interactive notebook; assessment checklists (found in teacher resource book); group planned observations, conversations throughout lessons/activities.

Investigation 2: Collaborative group outdoor investigations; class participates in observing, caring for and documenting changes in class tree through the year; student documentation of tree observations through the the seasons in an interactive notebook; assessment checklists (found in teacher resource book); group planned observations and conversations throughout lessons/activities.

Investigation 3: Collaborative group observation of on-going weather and temperature graphs throughout the year; month long documentation of weather and temperature in interactive notebooks; designing, creating, experimenting with and documentation of a handmade windsock; small groups design, create, experiment with and document observations of handcrafted wind chimes; assessment checklists (found in teacher resource book); observation, conversation throughout lessons/activities. Students will have the opportunity to work in small groups to research and write nonfiction reports about severe weather during kindergarten spring nonfiction writing unit.

What some ways we could possibly differentiate instruction to reach all learners?

How shall we teach for understanding?

Incorporate different learning styles as well hands-on and engaging activities?

Teachers will provide additional visuals, sentence frames, gestures, charts with icons, use songs and poems to support different learning styles. Students will work with partners and in small groups.

