

Grade K

Phenomena Tracker

My Big Nature Adventure

Blue: SEP Orange: DCI Green: CCC

Anchor Phenomenon: Some sunflowers are healthy and have yellow flowers, but other sunflowers are droopy and dying. Different plants and animals live in different places.

SUMMARY	PERFORMANCE EXPECTATIONS	KEY INVESTIGATIVE PHENOMENA	I CAN... STUDENT LEARNING OBJECTIVES	ANCHOR PHENOMENON TOUCHPOINT
Driving Question 1: What is science?				
<p>This Driving Question introduces budding scientists to the routines (classroom management) and practices (observation, safety) that scientists of all ages use.</p> <p>Teacher Edition</p> <p>Twig Book</p>	<p>Anchor Phenomenon K-LS1-1, K-ESS3-1</p>	<ul style="list-style-type: none"> Scientists make observations and carry out investigations. 	<ul style="list-style-type: none"> Be a safe scientist Investigate objects in nature. 	<ul style="list-style-type: none"> Students engage with the Anchor Phenomenon by making observations about sunflowers (see example in Lesson 3). Students generate questions about the Anchor Phenomenon (see example in Lesson 3).
Driving Question 2: What do plants need?				
<p>Students build on what they already know about plants and make observations (in the schoolyard and through videos) to learn more. Through experimentation, they test claims that plants need water and sunlight, and then summarize their understanding.</p> <p>Teacher Edition</p> <p>Twig Book</p>	<p>Driving Question K-LS1-1 Use observations to describe patterns of what plants and animals (including humans) need to survive</p> <p>Anchor Phenomenon K-LS1-1</p>	<ul style="list-style-type: none"> Plants need water. Plants need sunlight. 	<ul style="list-style-type: none"> Describe patterns of how plants and animals get what they need Observe that plants need water and sunlight to survive. 	<ul style="list-style-type: none"> Students investigate the Anchor Phenomenon by making observations about sunflowers in different environmental conditions (see example in Lesson 8).

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Driving Question 3: What do animals need?

Students learn that animals need food and water to survive, and that some animals eat plants while others eat other animals. This leads to reading a book that shows the interconnections between animals and what they eat. Lastly, the class differentiates between human needs and human wants, ending with the realization that people are animals, because we need the same things that other animals need.

[Teacher Edition](#)

[Twig Book](#)

Driving Question
K-LS1-1 Use observations to describe patterns of what plants and animals (including humans) need to survive
Anchor Phenomenon
K-LS1-1

- Animals need food.
- Animals need water. Some animals eat other animals, some animals eat plants, and some animals eat both.

- See patterns in what animals need and explain that all animals need food and water to live

- Students evaluate the Anchor Phenomenon by discussing the results of their investigation into sunflower growth, then identifying two things sunflowers need to survive (see example in Lesson 3).

Driving Question 4: What are living and non-living things?

This Driving Question explores the concept of non-living things, but also stresses the interconnectedness of living and non-living things: for example, as students explore the schoolyard, they turn over a rock and see the living things that use the rock for shelter. Students study a pond as their first example of a habitat.

[Teacher Edition](#)

[Twig Book](#)

Driving Question
K-LS1-1 Use observations to describe patterns of what plants and animals (including humans) need to survive

- Living things have basic needs.
- Non-living things do not have needs.
- Dead things used to be alive.

- Describe the difference between living and non-living things
- Use texts and videos to figure out that there are lots of different habitats on Earth

- Students evaluate the Anchor Phenomenon by discussing where animals live and what their needs are, then discussing where sunflowers grow and what their needs are (see example in Lesson 2).
- Students explain the Anchor Phenomenon by participating in a class discussion and drawing two sunflower models (see example in Lesson 4).

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Driving Question 5: Where can living things get what they need?

The final Driving Question in this module builds on student knowledge of living and non-living things—and their interdependence—to show that plants and animals live where they can get what they need to survive (in their habitat). Students explore four different habitats, noting the living things in each and how those living things find what they need in that habitat.

[Teacher Edition](#)

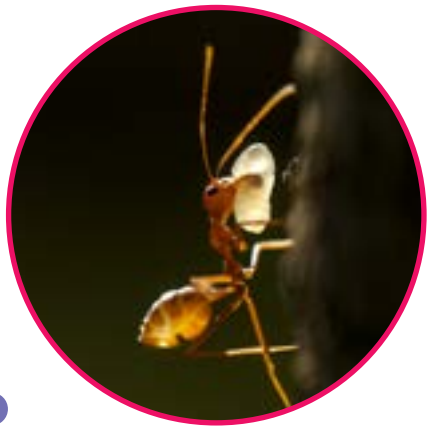
[Twig Book](#)

Driving Question
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
Anchor Phenomenon
K-LS1-1, K-ESS3-1

- Living things get what they need from their habitat.

- Read texts, watch videos, and explore nature to understand that living things get what they need from the places they live

- Students resolve the Anchor Phenomenon by using their bodies to model how sunflowers might grow in different environments (see example in Lesson 7).



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Marble Run Engineer

Blue: SEP Orange: DCI Green: CCC

Anchor Phenomenon: There are different ways to move the marble toward the 10-point cup. Some ways will get the marble in the cup and other ways will not.

What happens when we push, pull, and drop objects? How can we change their speed and direction?

SUMMARY

PERFORMANCE EXPECTATIONS

KEY INVESTIGATIVE PHENOMENA

I CAN... STUDENT LEARNING OBJECTIVES

ANCHOR PHENOMENON TOUCHPOINT

Driving Question 1: How can we make an object move faster or move in a different direction?

This Driving Question introduces students to motion. They learn that pushes and pulls affect an object's movement and that stronger pushes and pulls affect an object's movement more. They also learn about the "Big Pull" (gravity). Students summarize their learning by creating a narrative or informational work to share with the class.

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[Twig Book](#)

Driving Question
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

Anchor Phenomenon
K-PS2-1, K-PS2-2

- Engineers design and build useful things.
- A push or pull is needed to make an object move.
- Pushing or pulling an object harder makes it move faster.
- A push or pull can make a moving object change direction.

- **Talk about the effects of pushes and pulls**
- **Explore the phenomenon of the Big Pull (gravity)**
- **Write about the effects of pushes and pulls.**

- Students engage with the Anchor Phenomenon by watching a video about different ways to move a marble into a cup. Then they generate questions about the Anchor Phenomenon (see example in Lesson 1).
- Students investigate the Anchor Phenomenon by looking at the effects of pushes and pulls on marbles (see example in Lesson 7).
- Students evaluate the Anchor Phenomenon by discussing the results of their marble investigation (see example in Lesson 9).

Driving Question 2: How can we get marbles where we want them?

Students have a hands-on opportunity to explore pushes and pulls using marbles and a target they make. First they use their hands to push the marble to the target. Then they use ramps (gravity) to see how the game changes. Students investigate changing the speed of a marble and collisions between marbles.

[Teacher Edition](#)

[Twig Book](#)

Driving Question
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

Anchor Phenomenon
K-PS2-1, K-PS2-2

- Pushing or pulling an object harder makes it move faster.
- A push or pull can make a moving object change direction.

- **Learn from mistakes**
- **Use tools to change the speed and direction of a marble**
- **Predict what happens when two objects collide.**

- Students evaluate the Anchor Phenomenon by comparing a video to their own experiences of playing the Score 10 game (see example in Lesson 4).

Marble Run Engineer

Blue: SEP Orange: DCI Green: CCC

Anchor Phenomenon: There are different ways to move the marble toward the 10-point cup. Some ways will get the marble in the cup and other ways will not.

What happens when we push, pull, and drop objects? How can we change their speed and direction?

SUMMARY	PERFORMANCE EXPECTATIONS	KEY INVESTIGATIVE PHENOMENA	I CAN... STUDENT LEARNING OBJECTIVES	ANCHOR PHENOMENON TOUCHPOINT
Driving Question 3: How do we understand and design a marble run?				
<p>Students explore motion, make predictions, and test their predictions using marble runs. After learning all about what engineers do, they design, test, and refine their own marble run with a specific purpose in mind.</p> <p>Teacher Edition</p> <p>Twig Book</p>	<p>Driving Question</p> <p>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</p> <p>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</p> <p>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</p> <p>Anchor Phenomenon</p> <p>K-PS2-1, K-PS2-2</p>	<ul style="list-style-type: none"> • Engineers design and build useful things. • A push or pull is needed to make an object move. • Pushing or pulling an object harder makes it move faster. • A push or pull can make a moving object change direction. 	<ul style="list-style-type: none"> • Use a design to build a marble run • Test and improve my design • Give a presentation about my work. 	<ul style="list-style-type: none"> • Students explain the Anchor Phenomenon by developing a model and completing a sentence to show the best way to score in the Score 10 game (see example in Lesson 5). • Students resolve the Anchor Phenomenon through a class discussion (see example in Lesson 6).

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Phenomena Tracker

Be Prepared

Blue: SEP Orange: DCI Green: CCC

Anchor Phenomenon: Playgrounds in Arizona are covered by big umbrellas.

How do we observe weather and collect data to describe weather patterns over time?

SUMMARY

PERFORMANCE EXPECTATIONS

KEY INVESTIGATIVE PHENOMENA

I CAN... STUDENT LEARNING OBJECTIVES

ANCHOR PHENOMENON TOUCHPOINT

Driving Question 1: How can I make an umbrella that will protect me from the Sun's rays?

Students learn about temperature and how the Sun affects the temperature. Teams conduct investigations with model umbrellas made from different materials to gauge the materials' effectiveness in protecting from the Sun's rays.

Teacher Edition

Twig Book

Driving Question

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 provided to design and build a structure that will reduce the warming effect of sunlight on an area

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

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

Anchor Phenomenon

K-ESS2-1, K-ESS3-2, K-PS3-1, K-PS3-2

- Weather conditions follow patterns over time.
- The Sun heats the Earth.
- Tools (such as umbrellas) can be used to protect the Earth from the Sun's heat.

- Identify patterns in weather conditions
- Use models to identify which umbrella is best for different types of weather
- Plan and carry out an investigation.

- Students engage with the Anchor Phenomenon by observing playgrounds in Arizona and discussing the patterns they see. Then, they generate questions about the Anchor Phenomenon (see example in Lesson 1).
- Students investigate the Anchor Phenomenon by collecting data on the temperature of objects in two different playgrounds (see example in Lesson 7).
- Students evaluate the Anchor Phenomenon by participating in a class discussion and completing cloze sentences (see example in Lesson 8).

Be Prepared

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Anchor Phenomenon: Playgrounds in Arizona are covered by big umbrellas.

How do we observe weather and collect data to describe weather patterns over time?

SUMMARY	PERFORMANCE EXPECTATIONS	KEY INVESTIGATIVE PHENOMENA	I CAN... STUDENT LEARNING OBJECTIVES	ANCHOR PHENOMENON TOUCHPOINT
Driving Question 2: How can we describe the weather?				
<p>This Driving Question covers the phenomenon of weather and the types of weather that students can experience. The class works with weather symbols, first interpreting a story with symbols and then creating their own story to act out and give a weather report.</p> <p>Teacher Edition</p> <p>Twig Book</p>	<p>Driving Question 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 Anchor Phenomenon K-ESS2-1</p>	<ul style="list-style-type: none"> • Meteorologists identify patterns in weather data. • Patterns in weather data can be used to predict future weather conditions. 	<ul style="list-style-type: none"> • Describe patterns in the weather • Use weather symbols to show patterns in the weather • Look at images of a place, and make a weather report. 	<ul style="list-style-type: none"> • Students investigate the Anchor Phenomenon by gathering temperature and weather data from Phoenix, Arizona, during the summer (see example in Lesson 5).
Driving Question 3: What types of patterns can we notice in the weather?				
<p>Students observe patterns in temperature data and make predictions. First, they see that temperature changes over the course of a day. Then, they analyze data from two cities in the United States, as well as local weather data gathered over the past month. Finally, students find similarities and differences in temperature data for two different months in the same city.</p> <p>Teacher Edition</p> <p>Twig Book</p>	<p>Driving Question 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 Anchor Phenomenon K-ESS2-1, K-ESS3-2</p>	<ul style="list-style-type: none"> • Meteorologists identify patterns in weather data. • Patterns in weather data can be used to predict future weather conditions. 	<ul style="list-style-type: none"> • Identify and understand patterns in the weather • Collect weather data • Compare different kinds of weather. 	<ul style="list-style-type: none"> • Students evaluate the Anchor Phenomenon by discussing the weather data they collected (see example in Lesson 6).

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Driving Question 4: How do we use forecasts to prepare for severe weather?

This Driving Question uses video and text to help students learn about weather forecasts, especially forecasts of severe weather. Students practice forecasting and reporting about severe weather, taking turns to play the roles of meteorologist and news reporter.

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Driving Question

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

Anchor Phenomenon

K-ESS2-1, K-ESS3-2, K-PS3-1, K-PS3-2

- Meteorologists identify patterns in weather data.
- Patterns in weather data can be used to predict future weather conditions.
- Severe weather can be dangerous to humans.

- Identify and understand patterns in the weather
- Collect weather data
- Compare different kinds of weather.

- Students explain the Anchor Phenomenon by designing a playground in Phoenix, Arizona. Then they resolve the Anchor Phenomenon through a class discussion (see example in Lesson 4).



Grade K

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I Can

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Anchor Phenomenon: Hermit crabs are using plastic objects for shells.
How can I protect the environment from changes that harm it?

SUMMARY	PERFORMANCE EXPECTATIONS	KEY INVESTIGATIVE PHENOMENA	I CAN... STUDENT LEARNING OBJECTIVES	ANCHOR PHENOMENON TOUCHPOINT
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Driving Question 1: How can animals change their environment?

The module begins with students exploring their local area, looking for evidence of ways animals change their environment. Students read about earthworms and observe an earthworm habitat to see firsthand the changes worms make to their environment. The class engages with text and video to learn how beavers affect the environment. Students also draw a picture that shows how an animal of their choice changes the environment to meet its needs.

Teacher Edition

Twig Book

Driving Question
K-ESS2-2 Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs

Anchor Phenomenon
K-ESS2-2, K-ESS3-3

- An environment is anywhere that plants and animals live.
- Environments help plants and animals survive.
- Plants and animals can change their environments.

- Understand how animals change their environment to survive
- Observe earthworms changing their environment
- Debate how beavers affect their environment.

- Students engage with the Anchor Phenomenon by watching a video about hermit crabs. Then they generate questions about the Anchor Phenomenon (see example in Lesson 1).
- Students investigate the Anchor Phenomenon by observing a teacher demonstration of a hermit crab searching for a new home (see example in Lesson 2).
- Students evaluate the Anchor Phenomenon by participating in a class discussion and completing sentence frames about hermit crabs (see example in Lesson 6).

Driving Question 2: How can plants change their environment?

The focus moves from animals to plants and how they change the environment. Students consider trees and the shade they create. They also investigate the claim that plants cannot grow in the shade. The class considers trees that drop their leaves and studies how tree roots change the ground.

Teacher Edition

Twig Book

Driving Question
K-ESS2-2 Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs

- An environment is anywhere that plants and animals live.
- Environments help plants and animals survive.
- Plants and animals can change their environments.

- Understand how plants change their environment to meet their needs
- Create a model that shows how trees affect their environment
- Observe plants and use evidence to answer a question.

I Can

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Anchor Phenomenon: Hermit crabs are using plastic objects for shells.
How can I protect the environment from changes that harm it?

SUMMARY	PERFORMANCE EXPECTATIONS	KEY INVESTIGATIVE PHENOMENA	I CAN... STUDENT LEARNING OBJECTIVES	ANCHOR PHENOMENON TOUCHPOINT
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Driving Question 3: How can people change their environment?

Having explored how plants and animals change the environment, students now shift their focus onto how humans change the environment. The class explores the things that humans make from trees, as well as the negative effects of deforestation. Students also explore their local area to look for evidence of humans changing the environment. They also study why humans take water from the environment.

Teacher Edition

Twig Book

Driving Question
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
Anchor Phenomenon
 K-ESS2-2, K-ESS3-3

- Humans can change the environment.
- Some environmental changes are harmful.
- Humans can help the environment.

- Understand ways humans can help and harm the environment
- Identify human-made changes to the environment in our neighborhood
- Find ways to use less water at home and at school.

- Students investigate the Anchor Phenomenon by identifying items of trash on a beach. Then they evaluate the Anchor Phenomenon by describing how the hermit crabs' environment has been changed (see example in Lesson 1).

Driving Question 4: How can people protect the environment?

This Driving Question introduces the concept of helping the environment by reducing, reusing, and recycling. Text, video, and outdoor explorations provide plenty of inspiration for students to brainstorm and discuss the ways they can protect the environment.

Teacher Edition

Twig Book

Driving Question
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-ETS1-1 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
Anchor Phenomenon
 K-ESS2-2, K-ESS3-3

- Objects made from paper, glass, and plastic can be recycled.
- Reducing waste, reusing items, and recycling can help the environment.

- Present an idea for protecting the environment
- Create a poster showing how to reduce, reuse, or recycle in our community.

- Students explain the Anchor Phenomenon by developing a class explanation and drawing a picture to illustrate it (see example in Lesson 4).

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I Can

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Anchor Phenomenon: Hermit crabs are using plastic objects for shells.
How can I protect the environment from changes that harm it?

SUMMARY	PERFORMANCE EXPECTATIONS	KEY INVESTIGATIVE PHENOMENA	I CAN... STUDENT LEARNING OBJECTIVES	ANCHOR PHENOMENON TOUCHPOINT
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Driving Question 5: How can I reduce, reuse, or recycle?

This Driving Question moves from the previous Driving Questions' ideas to implementation of those ideas. Working with a partner, students decide on a project to help the environment at home or at school, design posters to explain their ideas, and present them to an audience.

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Driving Question

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-ETS1-1 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

Anchor Phenomenon

K-ESS2-2, K-ESS3-3

- Humans can help the environment.

- Understand how plants change their environment to meet their needs
- Create a model that shows how trees affect their environment
- Observe plants and use evidence to answer a question.

- Students resolve the Anchor Phenomenon through a class discussion (see example in Lesson 3).

