West Virginia Science Grade 3 Overview

FOSS Next Generation is the most engaging K-8 science program for the College- and Career-Readiness Standards (WVCCR). This document has been created to guide grade 3 teachers and evaluators through the FOSS components, local and relevant anchor phenomena, and a critical pathway through the modules.

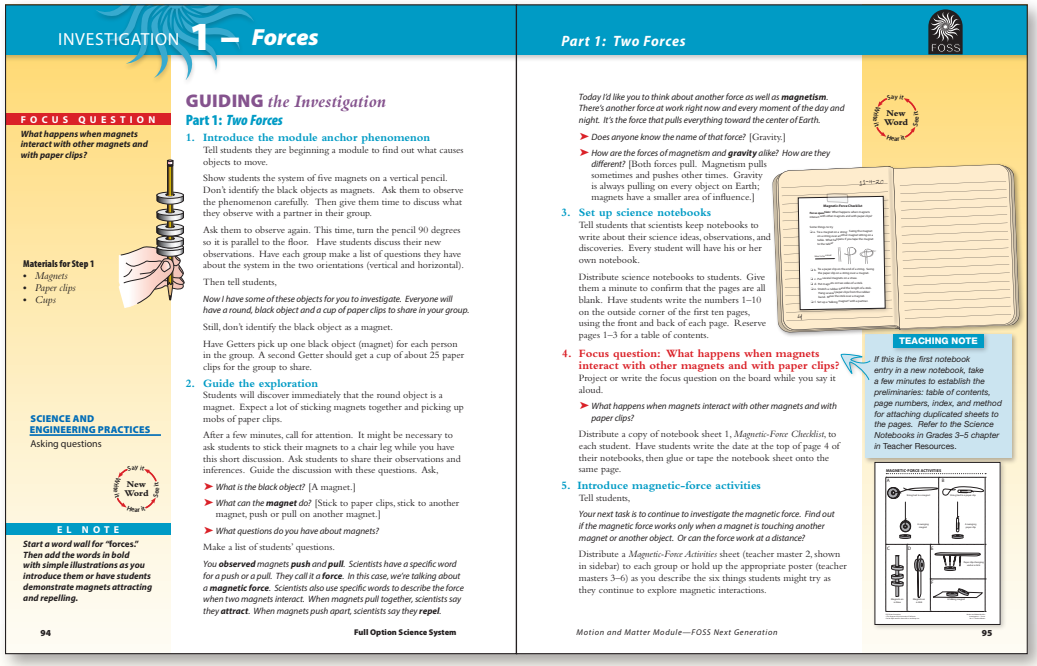
Navigation Guide

How to Review FOSS

Teacher Editions

The ***Investigations Guide*** is a spiral-bound guide containing the active investigations. FOSS lesson plans include:

- Materials used in the current steps
- Key three-dimensional highlights
- Embedded assessment "What to Look For"
- Sense-making discussions
- Strategies to support English learners
- Vocabulary review
- Teaching notes to facilitate instruction



Start your review here:

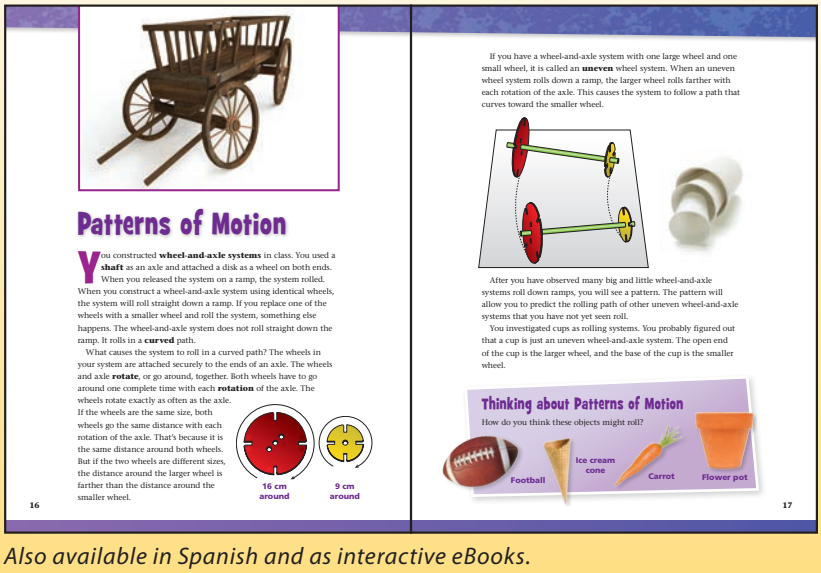
- **Water and Climate:** pp. 1–5; 77–79, 91–96
- **Motion and Matter:** pp. 1–5, 79–81, 94–101
- **Structures of Life:** pp. 1–5, 81–83, 99–107

Teacher Resources (also online) contains teacher-support chapters on three-dimensional teaching and learning, access and equity, and environmental literacy.

Student Books

The ***FOSS Science Resources*** student book contains readings developed to reinforce and extend core ideas covered during FOSS active investigations. Readings give students opportunities to:

- Ask and answer questions
- Use evidence to support their ideas
- Use text to acquire information
- Draw information from multiple sources
- Interpret illustrations to build understanding

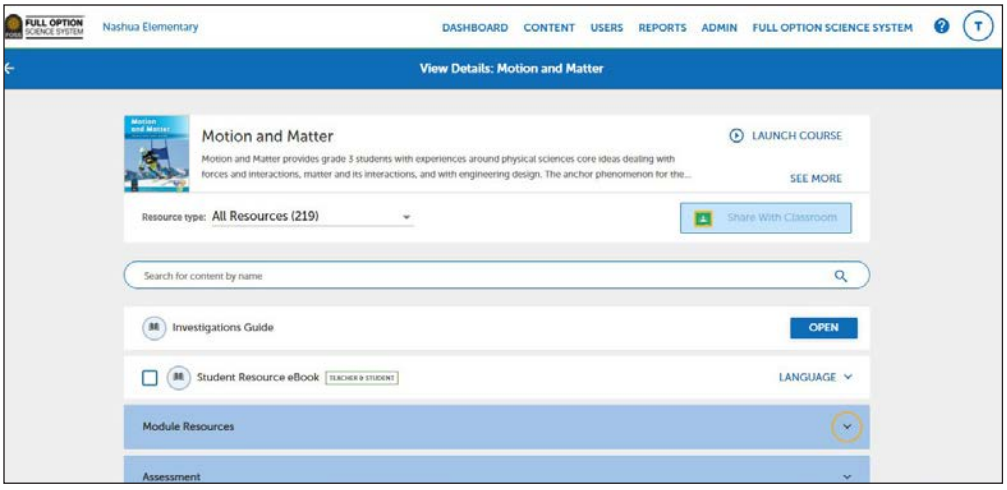


Also available in Spanish and as interactive eBooks.

FOSSweb on ThinkLink

Technology for Learning Anywhere

FOSSweb digital resources are located on ThinkLink, School Specialty's new cloud-based curriculum platform.

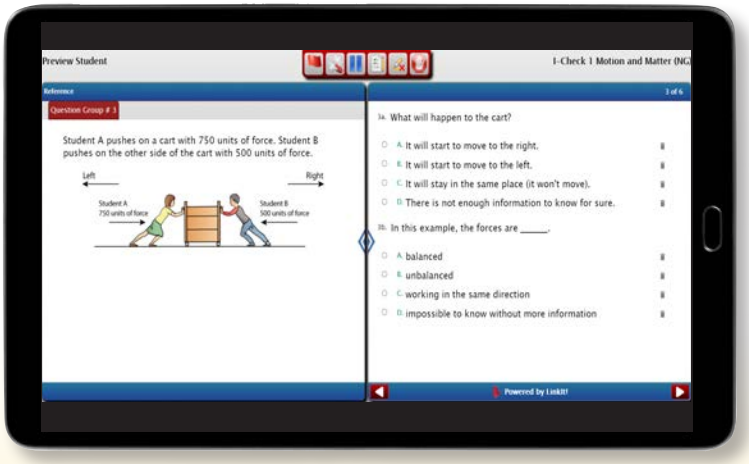


Access:

- Supports easy single sign-on and class management with Google classroom and learning management systems.
- Provides easy access to both teacher and student digital resources, including duplication masters, online activities, and streaming videos.

FOSSmap Online Assessment

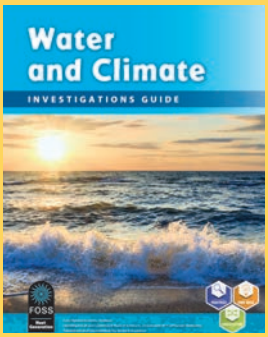
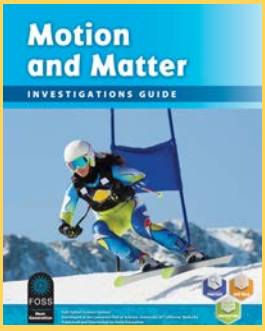
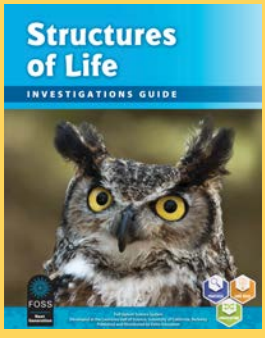
Students in grades 3–5 can take summative assessments online with automatic coding of most responses. Student and class level reports help you identify instructional next steps.



Online Activities for Differentiating Instruction

FOSSweb digital resources provide engaging, interactive virtual investigations and tutorials that offer additional content and skill support for students.

FOSS Modules—Grade 3

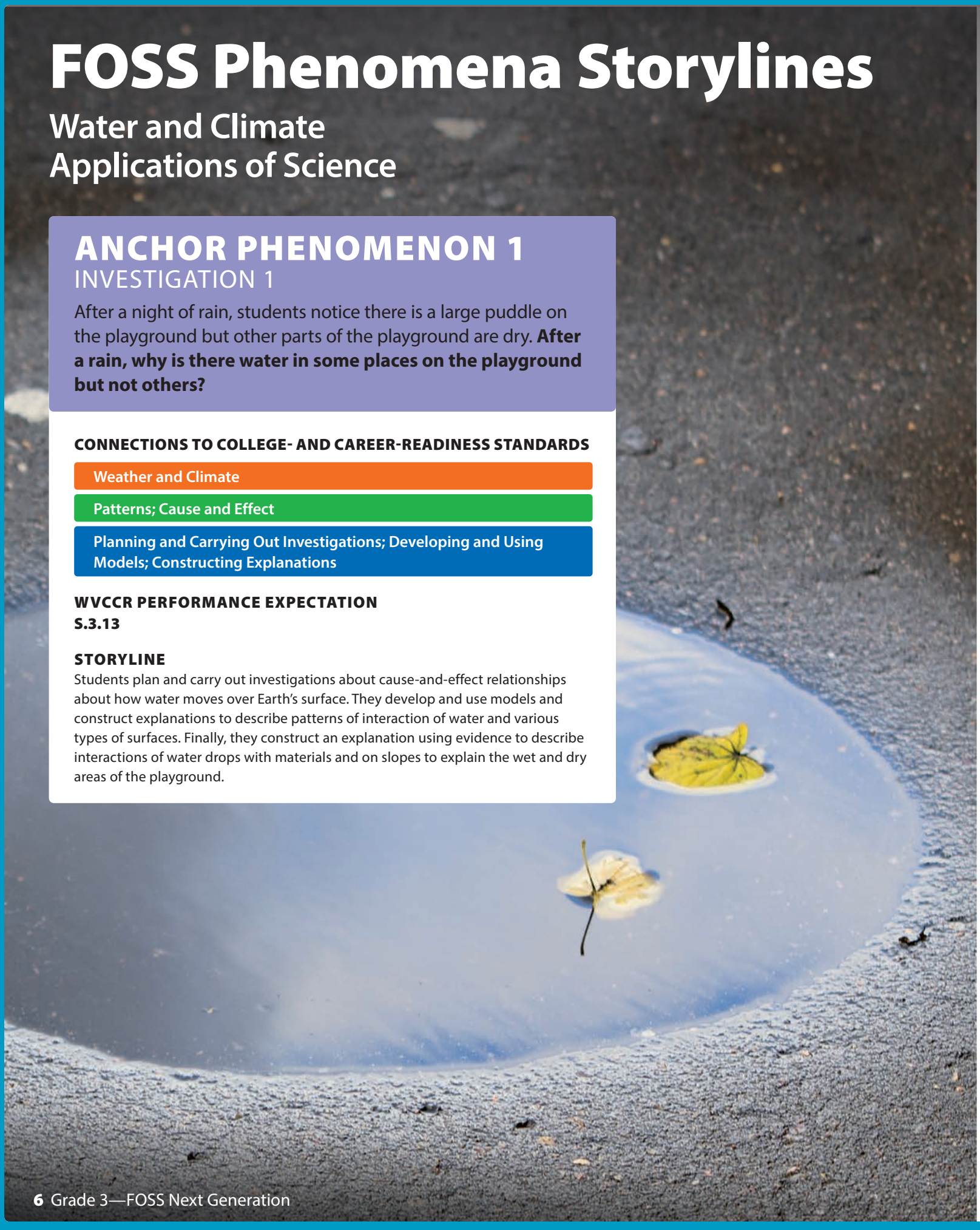
	Module Phenomenon and Driving Question	Module Overview/Bundled Performance Expectations
FOSS Module	**Water and Climate Module** **Anchor phenomenon:** *Weather in diverse climates* **Module driving questions:** • *How is water involved in weather?* • *Are weather conditions the same around the world and through the year?*  5 investigations **Critical Pathway:** 27 sessions**	Water is the most important substance on Earth. Water dominates the surface of our planet, changes the face of the land, and defines life. Weather is driven by the Sun and involves the movement of water over the Earth. Climate is determined in part by the amount of precipitation in a region and by temperature fluctuations. Students engage with these ideas as they explore the properties of water, the water cycle, interactions between water and other earth material, and natural hazards due to weather interactions. They learn how humans use water as a natural resource and how societies depend on water and new technologies to conserve and protect this resource. **Earth Sciences:** S.3.13, S.3.14, S.3.15, S.2.11* **Physical Sciences:** S.2.1* **ETAS:** S.3.16, S.3.17, S.3.18
FOSS Module	**Motion and Matter Module** **Anchor phenomenon:** *Motion* **Module driving question:** • *What causes objects to move?*  4 investigations **Critical Pathway:** 30 sessions	Students investigate physical science core ideas dealing with forces and interactions, matter and its interactions, and engineering design. Magnetism and gravity are the anchor phenomena investigated as students look for patterns of motion to predict future motion. Students work with magnets and paper clips, wheel-and-axle systems, paper air twirlers, and rotating tops. Students use their knowledge of science to enter the engineering design process and through the process refine their science understanding. **Physical Sciences:** S.3.1, S.3.2, S.3.3, S.3.4 **ETAS:** S.3.16, S.3.17, S.3.18
FOSS Module	**Structures of Life Module** **Anchor phenomenon:** *Diversity of plants and animals we observe in our world* **Module driving questions:** • *Where do organisms come from and how do they survive?* • *How are all the different kinds of plants and animals able to continue to exist on Earth?*  4 investigations **Critical Pathway:** 35 sessions	Students experience that organisms exhibit a variety of strategies for life, have a variety of observable structures and behaviors, have varied but predictable life cycles, and reproduce their own kind by passing inherited characteristics to offspring. Students explore how individual organisms have variations in their traits that may provide an advantage in surviving in a particular environment, and how our knowledge of animals that survived in past environments is inferred by studying fossil characteristics. **Life Sciences:** S.3.9, S.3.6, S.3.10, S.3.11, S.4.11*, S.3.12, S.3.7, S.3.8

* These PEs are addressed in grade 2 and extended in grade 3.
** A session is 45 minutes.

The Core Topics of Science	The Practices of Scientists and Engineers	Science Connecting Concepts
Weather and Climate Earth's Systems: Processes that Shape the Earth Structure and Properties of Matter Engineering Design	• Asking questions and defining problems • Developing and using models • Planning and carrying out investigations • Analyzing and interpreting data • Using mathematics and computational thinking • Constructing explanations and designing solutions • Engaging in argument from evidence • Obtaining, evaluating, and communicating information	• Patterns • Cause and effect • Scale, proportion, and quantity • Systems and system models
Forces and Interactions Engineering Design	• Asking questions and defining problems • Developing and using models • Planning and carrying out investigations • Analyzing and interpreting data • Using mathematics and computational thinking • Constructing explanations and designing solutions • Engaging in argument from evidence • Obtaining, evaluating, and communicating information	• Patterns • Cause and effect • Scale, proportion, and quantity • Systems and system models • Energy and matter
Interdependent Relationships in Ecosystems Inheritance and Variation of Traits: Life Cycles and Traits Earth's Systems: Processes that Shape the Earth	• Asking questions and defining problems • Developing and using models • Planning and carrying out investigations • Analyzing and interpreting data • Using mathematics and computational thinking • Constructing explanations and designing solutions • Engaging in argument from evidence • Obtaining, evaluating, and communicating information	• Patterns • Cause and effect • Scale, proportion, and quantity • Systems and system models • Structure and function

FOSS Phenomena Storylines

Water and Climate
Applications of Science



ANCHOR PHENOMENON 1
INVESTIGATION 1

After a night of rain, students notice there is a large puddle on the playground but other parts of the playground are dry. **After a rain, why is there water in some places on the playground but not others?**

CONNECTIONS TO COLLEGE- AND CAREER-READINESS STANDARDS

- Weather and Climate
- Patterns; Cause and Effect
- Planning and Carrying Out Investigations; Developing and Using Models; Constructing Explanations

WVCCR PERFORMANCE EXPECTATION
S.3.13

STORYLINE

Students plan and carry out investigations about cause-and-effect relationships about how water moves over Earth's surface. They develop and use models and construct explanations to describe patterns of interaction of water and various types of surfaces. Finally, they construct an explanation using evidence to describe interactions of water drops with materials and on slopes to explain the wet and dry areas of the playground.

ANCHOR PHENOMENON 2
INVESTIGATIONS 2–3

A student is talking to a cousin who lives in a different state and mentions they need to conserve water because they are in a drought. The cousin is confused because it has been raining almost every day for a week where they live. **What causes the impact of weather on people to be different from place to place?**

CONNECTIONS TO COLLEGE- AND CAREER-READINESS STANDARDS

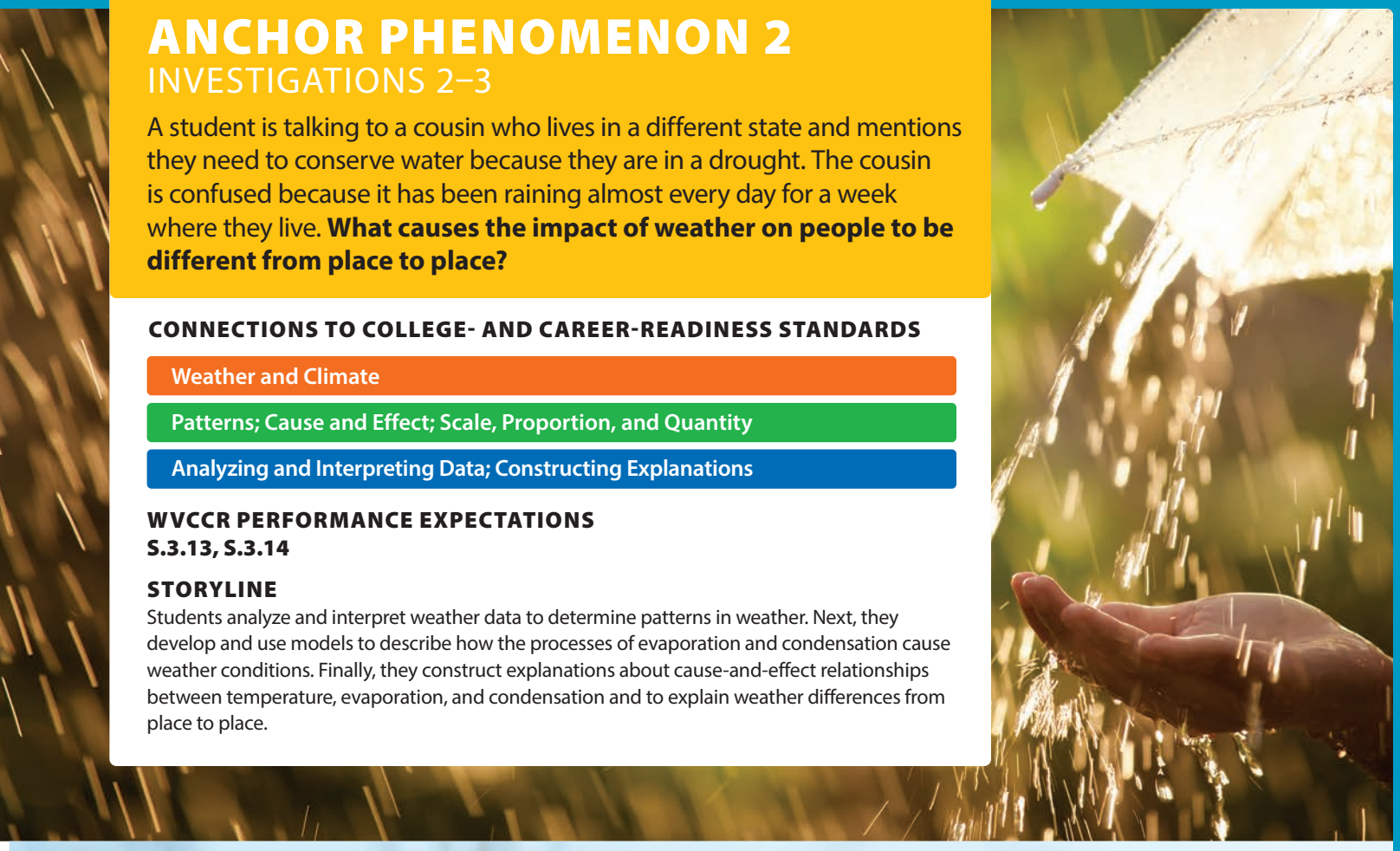
- Weather and Climate
- Patterns; Cause and Effect; Scale, Proportion, and Quantity
- Analyzing and Interpreting Data; Constructing Explanations

WVCCR PERFORMANCE EXPECTATIONS

S.3.13, S.3.14

STORYLINE

Students analyze and interpret weather data to determine patterns in weather. Next, they develop and use models to describe how the processes of evaporation and condensation cause weather conditions. Finally, they construct explanations about cause-and-effect relationships between temperature, evaporation, and condensation and to explain weather differences from place to place.



ANCHOR PHENOMENON 3
INVESTIGATION 4

One morning in February, students at a school near Oakland, CA came to school very excited, talking about the weather. They can see snow! None of them remember seeing snow near their school. **How unusual is the snowy weather condition for the region of Oakland, California?**

CONNECTIONS TO COLLEGE- AND CAREER-READINESS STANDARDS

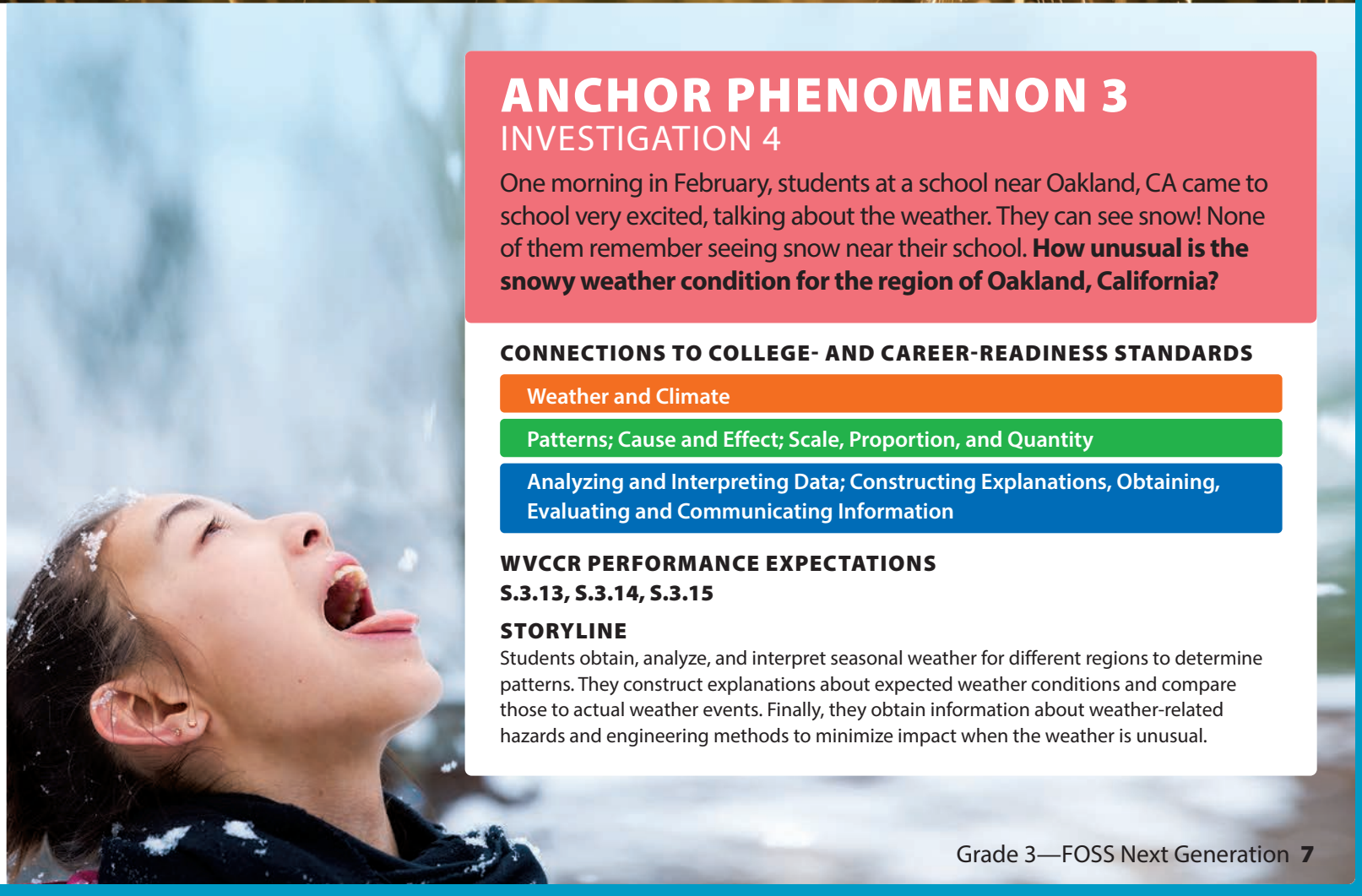
- Weather and Climate
- Patterns; Cause and Effect; Scale, Proportion, and Quantity
- Analyzing and Interpreting Data; Constructing Explanations, Obtaining, Evaluating and Communicating Information

WVCCR PERFORMANCE EXPECTATIONS

S.3.13, S.3.14, S.3.15

STORYLINE

Students obtain, analyze, and interpret seasonal weather for different regions to determine patterns. They construct explanations about expected weather conditions and compare those to actual weather events. Finally, they obtain information about weather-related hazards and engineering methods to minimize impact when the weather is unusual.



FOSS Phenomena Storylines

Motion and Matter
Applications of Science

ANCHOR PHENOMENON 1
INVESTIGATION 1

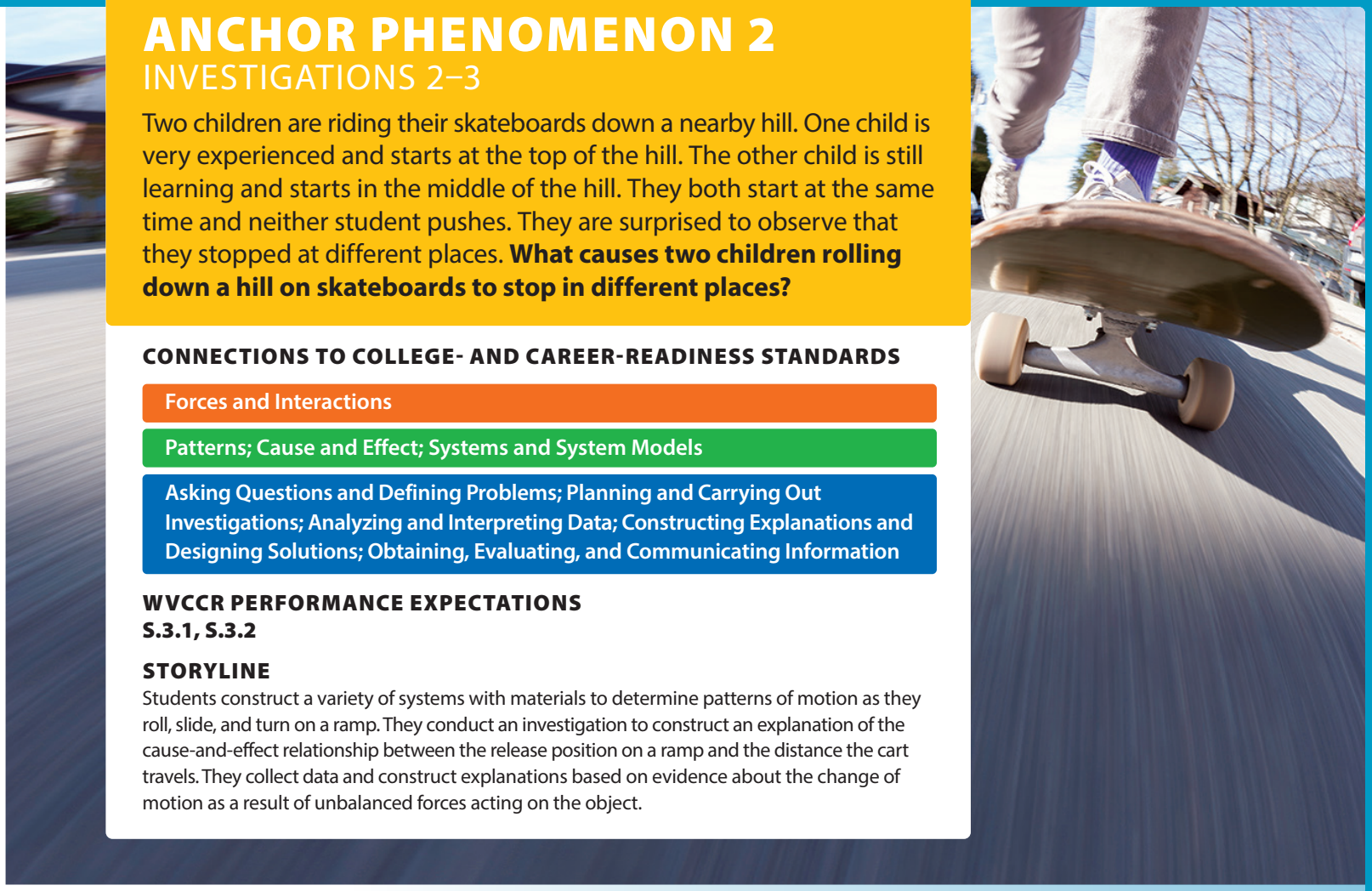
A student wants to hang a poem and a painting from school on the refrigerator using magnets. The student hangs up the poem using one magnet. When they try to hang up the painting, the magnet does not hold the painting. The magnet and painting keep falling. **Why does the poem stay on the refrigerator, but the painting does not?**

CONNECTIONS TO COLLEGE- AND CAREER-READINESS STANDARDS

- Forces and Interactions
- Patterns; Cause and Effect
- Planning and Carrying Out Investigations; Developing and Using Models; Engaging in Argument from Evidence

WVCCR PERFORMANCE EXPECTATIONS
S.3.1, S.3.2, S.3.3

STORYLINE
Students encounter mysterious, floating objects (magnets). They plan and carry out investigations examining cause-and-effect relationships with magnets and varying distances between magnets. They develop a model of magnetic fields based on evidence to explain the decreasing force of attraction when the distance between magnets is increased. They engage in argumentation to explain the forces acting on a floating paper clip, including gravity, and develop a model to explain the paper clip's change in motion.



ANCHOR PHENOMENON 2
INVESTIGATIONS 2–3

Two children are riding their skateboards down a nearby hill. One child is very experienced and starts at the top of the hill. The other child is still learning and starts in the middle of the hill. They both start at the same time and neither student pushes. They are surprised to observe that they stopped at different places. **What causes two children rolling down a hill on skateboards to stop in different places?**

CONNECTIONS TO COLLEGE- AND CAREER-READINESS STANDARDS

Forces and Interactions

Patterns; Cause and Effect; Systems and System Models

Asking Questions and Defining Problems; Planning and Carrying Out Investigations; Analyzing and Interpreting Data; Constructing Explanations and Designing Solutions; Obtaining, Evaluating, and Communicating Information

WVCCR PERFORMANCE EXPECTATIONS
S.3.1, S.3.2

STORYLINE
Students construct a variety of systems with materials to determine patterns of motion as they roll, slide, and turn on a ramp. They conduct an investigation to construct an explanation of the cause-and-effect relationship between the release position on a ramp and the distance the cart travels. They collect data and construct explanations based on evidence about the change of motion as a result of unbalanced forces acting on the object.

ANCHOR PHENOMENON 3
INVESTIGATION 3

A group of students was testing a cart they built. Whenever the students tested the cart, it would roll off the table and fall apart. **How can you design a cart that will stop at the edge of the table?**

CONNECTIONS TO COLLEGE- AND CAREER-READINESS STANDARDS

Forces and Interactions; Engineering Design

Patterns; Cause and Effect; Systems and System Models

Asking Questions and Defining Problems; Analyzing and Interpreting Data; Constructing Explanations and Designing Solutions

WVCCR PERFORMANCE EXPECTATIONS
S.3.2, S.3.4, S.3.16, S.3.17, S.3.18

STORYLINE
Students design and construct a cart with materials to apply their understanding about balanced and unbalanced forces. They apply their understanding of cause-and-effect relationships and patterns of motion as they use magnets in the design of their carts to perform a useful task.

FOSS Phenomena Storylines

Structures of Life
Applications of Science

ANCHOR PHENOMENON 1
INVESTIGATIONS 1–2

In the spring, a class plants two kinds of seeds in the school garden. In Box A they plant beans and in Box B they plant corn. The students make sure the seeds get plenty of water. They check on the plant growth after several weeks. In Box A, they see bean plants but also sunflower plants. In Box B, they see tiny corn plants and pumpkin plants. **Where did the sunflower and pumpkin plants come from, and why do they look different from beans and corn?**

CONNECTIONS TO COLLEGE- AND CAREER-READINESS STANDARDS

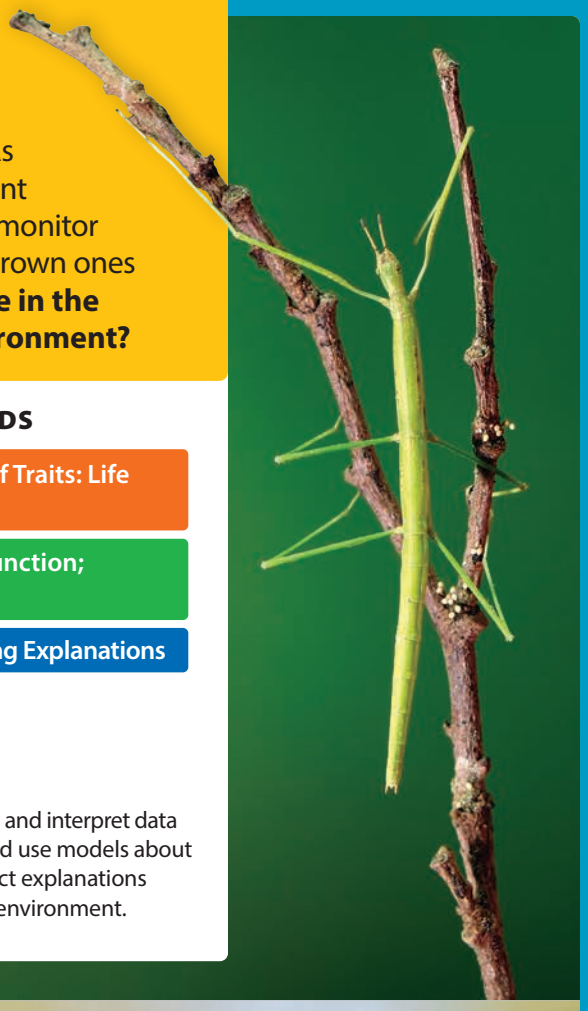
- Inheritance and Variation of Traits: Life Cycles and Traits
- Patterns, Cause and Effect; Structure and Function
- Planning and Carrying Out Investigations; Constructing Explanations; Engaging in Argument from Evidence

WVCCR PERFORMANCE EXPECTATIONS
S.3.9, S.3.10, S.3.11

STORYLINE
Students plan and carry out investigations about cause-and-effect relationships with water and seeds to figure out where plants come from. They construct explanations based on evidence about similarities and differences in the growth of different kinds of plants, their structures, and the function of those structures. Next, they gather and evaluate information about how seeds travel. Finally, students engage in argument about the patterns of plant growth and development of plants.

ANCHOR PHENOMENON 2
INVESTIGATIONS 2–3

Some students observe walking sticks living in some wood chips. As students observe more closely, they discover there are three different colors of walking sticks: green, brown-green, and brown. Students monitor the number of each color over many months, and they notice the brown ones begin to outnumber the other colors. **What is causing the change in the numbers of each color of walking stick in the wood chip environment?**



CONNECTIONS TO COLLEGE- AND CAREER-READINESS STANDARDS

Interdependent Relationships in Ecosystems; Inheritance and Variation of Traits: Life Cycles and Traits; Earth's Systems: Processes that Shape the Earth

Patterns; Cause and Effect; Systems and System Models; Structure and Function; Stability and Change

Analyzing and Interpreting Data; Developing and Using Models; Constructing Explanations

WVCCR PERFORMANCE EXPECTATIONS
S.3.9, S.3.10, S.3.11, S.3.7, S.3.8, S.4.12

STORYLINE
Students work with simulations and gather data about walking stick survival. They analyze and interpret data to determine patterns of change in organisms in an environment. Next, they develop and use models about the change in traits in a species over time in different environments. Finally, they construct explanations based on evidence about the adaptations of organisms that allow them to survive in an environment.

ANCHOR PHENOMENON 3
INVESTIGATION 4

A group of researchers discover a huge pile of owl pellets in a cave that dates back 10,000 years. An owl pellet is a ball of undigested fur and bones that an owl spits up after eating small animals. The oldest pellets are at the bottom of the pile. **What can researchers discover about past environments by studying the bones in the owl pellet pile?**

CONNECTIONS TO COLLEGE- AND CAREER-READINESS STANDARDS

Inheritance and Variation of Traits: Life Cycles and Traits; Earth's Systems: Processes that Shape the Earth

Scale, Proportion, and Quantity; Systems and System Models

Planning and Carrying Out Investigations; Analyzing and Interpreting Data; Constructing Explanations

WVCCR PERFORMANCE EXPECTATIONS
S.3.10, S.4.11

STORYLINE
Students plan and carry out investigations with owl pellets and analyze skeletal remains of a predator during a dissection. Next, they obtain and evaluate information about owl pellets found in a cave in Utah and the work of scientists. Finally, they construct explanations about predator-prey relationships and the environment in which the organisms lived.

Critical Pathway

West Virginia Science

Today, many elementary educators face the reality that time for science instruction is limited. The FOSS developers have determined a Critical Pathway through each module that is faithful to the standards in the time you have to teach with the flexibility to expand or differentiate instruction. There are 92 total sessions for grade 3.

WATER AND CLIMATE

SESSION	INV./PART	CRITICAL PATHWAY	IG PAGES
1	Inv 1.1	Drops of Water, Steps 1–8	91–92
2	Inv 1.1	Drops of Water, Steps 9–18	93–96
3	Inv 1.2	Water on a Slope, Steps 1–15, 21	99–102; 106
	Inv 1.2	*Water on a Slope, Steps 16–20, 22—Readings, Video, Tutorial*	*103–107*
	Inv. 1.3	*Soaking Sponges, Steps 1–7, 16–17*	*112–113; 118*
	Inv 1.3	*Soaking Sponges, Steps 8–15—Reading, Tutorial, Multimedia*	*113–117*
4	Inv 1.4	Water in Nature, Steps 1–13; Review Steps 16–17	153–156; 126
	Inv 1.4	*Water in Nature, Steps 14–15—Reading*	*122–124*
5	Inv 1.4	I-Check 1, Step 18 (Later plan self-assessment)	127
6	Inv 2.1	Measuring Temperature, Steps 1–9	149–150
7	Inv 2.1	Measuring Temperature, Steps 10–17	151–153
	Inv 2.1	*Measuring Temperature, Steps 18–21—Reading*	*154–155*
8	Inv 2.2	Build a Thermometer, Steps 1–19	159–162
9	Inv 2.3 Inv. 2.5	Sinking and Floating Water, Steps 1–13 Water Outdoors, Review Steps 10–11	165–167
	Inv 2.3	*Sinking and Floating Water, Steps 14–18*	*168–170*
	Inv 2.4	*Water as Ice, Steps 1–6*	*174–175*
	Inv 2.4	*Water as Ice, Steps 7–15*	*175–177*
	Inv 2.4	*Water as Ice, Steps 16–20*	*175–178*
	Inv 2.4	*Water as Ice, Steps 21–23—Reading*	*179–180*
	Inv 2.5	*Water Outdoors, Steps 1–9*	*184–186*
10	Inv 2.5	I-Check 2, Step 12 (Later plan self-assessment)	187
11	Inv 3.1	Measuring Weather, Steps 1–10	208–211
*12	Inv 3.1	Measuring Weather, Steps 11–13, need 3 days of data	211–212
*13	Inv 3.1	Measuring Weather, Steps 14–20, need 7 days of data	213–215

CONTACT YOUR SALES REPRESENTATIVE IF YOUR DISTRICT NEEDS A CUSTOMIZED CRITICAL PATHWAY.

WATER AND CLIMATE (continued)

SESSION	INV./PART	CRITICAL PATHWAY	IG PAGES
14	Inv 3.2	Evaporation, Steps 1–3	218
15	Inv 3.2	Evaporation, Steps 4–8; 11	219–220; 222
	Inv 3.2	*Evaporation, Steps 9–10—Reading*	*221*
	Inv 3.3	*Surface Area, Steps 1–4*	*225–226*
	Inv 3.3	*Surface Area, Steps 5–10, needs to be a few days later*	*226–227*
	Inv 3.3	*Surface Area, Steps 11–13—Reading*	*228*
	Inv 3.4	*Evaporation Locations Steps 1–21; Focus on Experiment*	*231–232*
16	Inv 3.5	Condensation, Steps 1–9	241–243
17	Inv 3.5	Condensation, Steps 10–17	244–245
18	Inv 3.5	Condensation, Steps 18–21; Review Steps 22–24	246–247; 248
19	Inv 3.5	I-Check 3, Step 25 (Later plan self-assessment)	249
20	Inv 4.1	Seasonal Weather, Steps 1–7	265–267
21	Inv 4.1	Seasonal Weather, Steps 8–14	267–269
22	Inv 4.2	Describing Climate, Steps 1–10	272–274
23	Inv 4.2	Describing Climate, Steps 11–17	275–277
24	Inv 4.3	Weather-Related Natural Hazards, Steps 1–10	281–283
25	Inv 4.3	Weather-Related Natural Hazards, Steps 11–16	284–285
26	Inv 4.3 Inv 5.1 Inv 5.3	Review Steps 17–20 for Inv 4 Water in Earth Materials, Steps 12–16 Review Step 27 for Module	286–287 308–310 330–331
		Water in Earth Materials, Steps 1–11—Focus on Experiment	*304–307*
27	Inv 5.3	I-Check 4 or Posttest, Inv 4.3 Step 20/Inv 5.3, Step 28	287 or 331
	Inv 5.2	*Water in Soil, Steps 1–21—Focus on Environmental Literacy*	*314–317*
	Inv 5.3	*Waterwheels, Steps 1–28—Focus on Engineering*	*323–331*

Investigation sessions, with references to the pages and step numbers in the *Guide*

Optional short sessions within a critical pathway part

Entire parts of the investigation that are not included in this critical pathway; these activities provide additional opportunities to deepen the learning experience

MOTION AND MATTER

SESSION	INV./PART	CRITICAL PATHWAY	IG PAGES
1		Survey—Assessment for prior knowledge	296
2	Inv 1.1	Two Forces, Steps 1–6	94–96
3	Inv 1.1	Two Forces, Steps 7–14	96–99
4	Inv 1.1	Two Forces, Steps 15–18	100–101
5	Inv 1.2	Magnetic Force Investigation, Steps 1–10	105–107
6	Inv 1.2	Magnetic Force Investigation, Steps 11–14	107–109
7	Inv 1.3	More about Forces, Steps 1–8 (Can omit Step 7 videos)	113–116
8	Inv 1.3	More about Forces, Steps 9–14	117–118
9	Inv 1.3	More about Forces, Review Steps 15–16	119
10	Inv 1.3	I-Check 1, Step 17 (Later plan self-assessment)	120
11	Inv 2.1	Wheel-and-Axle System, Steps 1–11	135–137
12	Inv 2.1	Wheel-and-Axle System, Steps 12–18	138–139
13	Inv 2.2	Predicting Motion of New Systems, Steps 1–6	142–143
	Inv 2.2	*Predicting Motion of New Systems, Steps 7–11—Investigation*	*143–144*
14	Inv 2.2	Predicting Motion of New Systems, Steps 12–13, 17	144–145, 147
	Inv 2.2	*Predicting Motion of New Systems, Steps 14–15—Reading*	*146*
	Inv 2.2	*Predicting Motion of New Systems, Step 16—Online activity*	*147*
15	Inv 2.3	Twirly Birds, Steps 1–13	151–155
16	Inv 2.3	Twirly Birds, Steps 14–17	155–156
17	Inv 2.3	Twirly Birds, Steps 18–23	156–157
18	Inv 2.4	Tops, Steps 1–10; Review Steps 18–19	161–163, 166–67
	Inv 2.4	*Tops, Steps 11–17—Extended Investigation, Reading*	*163–165*
19	Inv 2.4	I-Check 2, Step 20 (Later plan self-assessment)	167

MOTION AND MATTER (continued)

SESSION	INV./PART	CRITICAL PATHWAY	IG PAGES
20	Inv 3.1	From Here to There, Steps 1–11	182–184
21	Inv 3.1	From Here to There, Steps 12–18	185–186
	Inv 3.2	*Distance Challenge, Steps 1–7—Review measuring distance*	*190–191*
22	Inv 3.2	**Distance Challenge, Steps 8–16** (Step 10 optional)	192–193
	Inv 3.2	*Distance Challenge, Steps 17–22—Reading, Online Activities*	*194–195*
23	Inv 3.3	Investigating Start Position, Steps 1–10	199–201
24	Inv 3.3	Investigating Start Position, Steps 11–14	202–203
25	Inv 3.3	Investigating Start Position, Steps 15–16	204–205
26	Inv 3.4	Cart Tricks, Steps 1–6	208–209
27	Inv 3.4	Cart Tricks, Steps 7–12; Review Steps 13–15	209–212
28	Inv 3.4	I-Check 3, Step 16 (Later plan self-assessment)	212
29	Inv 4.3	Module Review, Step 17 (Inv 4.3)	250
30	Inv 4.3	Posttest	250
	Inv 4.1	*Mixing Solids and Liquids, Steps 1–18*	*227–230*
	Inv 4.2	*Reactions, Steps 1–19*	*236–242*
	Inv 4.3	*Metric Field Day, Steps 1–14*	*246–248*

Investigation sessions, with references to the pages and step numbers in the *Guide*

Optional short sessions within a critical pathway part

Entire parts of the investigation that are not included in this critical pathway; these activities provide additional opportunities to deepen the learning experience

STRUCTURES OF LIFE

SESSION	INV./PART	CRITICAL PATHWAY	IG PAGES
1	Inv 1.1	**Seed Search, Steps 1–2; 10–13; 22**	99, 102–104, 107
	Inv 1.1	*Seed Search, Steps 3–9*	*99–101*
	Inv 1.1	*Seed Search, Steps 19–21—Focus on Reading*	*105–107*
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**Indicates the need to allow for growth time*

STRUCTURES OF LIFE (continued)

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**Indicates the need to allow for growth time*

Investigation sessions, with references to the pages and step numbers in the *Guide*

Optional short sessions within a critical pathway part

Entire parts of the investigation that are not included in this critical pathway; these activities provide additional opportunities to deepen the learning experience

Diverse Learning Needs

Designed for All Learners

Access and Equity

The FOSS Program has been designed to maximize the science learning opportunities for all students, including those who have traditionally not had access to or have not benefited from equitable science experiences—students with special needs, ethnically diverse learners, English learners, students living in poverty, girls, and advanced and gifted learners. FOSS is rooted in a 30-year tradition of multisensory science education and informed by recent research on UDL and culturally and linguistically responsive teaching and learning. See the **Access and Equity** chapter on FOSSweb for strategies and suggestions.

English Language Development (ELD)

The FOSS active investigations, science notebooks, *FOSS Science Resources* articles, and formative assessments provide rich contexts in which students develop and exercise thinking and communication in both science and language arts. Students experience the natural world in real and authentic ways and use language to inquire, process information, and communicate their thinking about scientific phenomena.

Strategies for Effective Learning

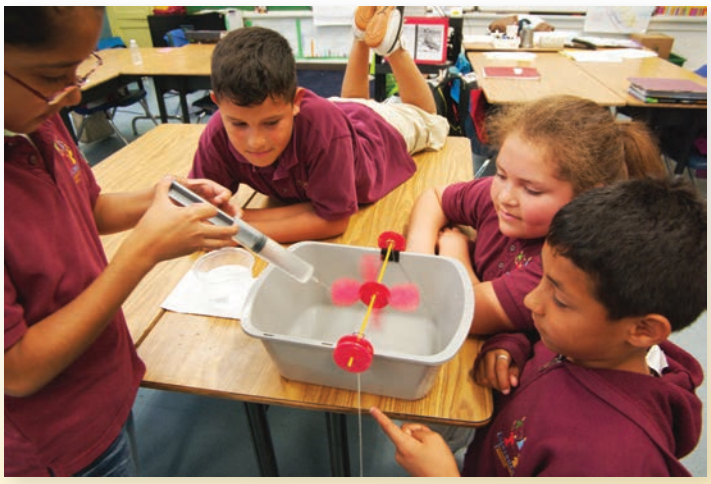
Engaging Students

English Language Art Connections

FOSS leverages the natural connection between science and language arts. Students read articles and think critically to enhance their understanding. Students practice ELA skills as well as scientific thinking by organizing their thoughts in a science notebook.

Engineering

FOSS provides meaningful engineering design challenges to students across the grade bands. Students take on the role of scientists to problem-solve and then take on the role of engineers to design and innovate.



Environmental Literacy

FOSS throws open the classroom door and takes students outdoors to apply scientific principles to natural systems.

Custom Professional Learning

FOSS can help you build a customized professional learning plan for your district, through its experienced network of consultants to facilitate workshops and sustain the progress of your implementation through ongoing support.

WEST VIRGINIA FOSS NEXT GENERATION K–8 SCOPE AND SEQUENCE

Grade	Integrated Middle Grades				
6–8	Heredity and Adaptation*	Chemical Interactions			
	Earth History	Diversity of Life	Human Systems Interactions*	Electromagnetic Force*	Gravity and Kinetic Energy*
	Planetary Science	Weather and Water	Populations and Ecosystems	Waves*	

*Half-length courses Physical Science content Earth Science content Life Science content Engineering content

Grade	Physical Science	Earth Science	Life Science
5	Mixtures and Solutions	Earth and Sun	Living Systems
4	Energy	Soils, Rocks, and Landforms	Environments
3	Motion and Matter	Water and Climate	Structures of Life
2	Solids and Liquids	Pebbles, Sand, and Silt	Insects and Plants
1	Sound and Light	Air and Weather	Plants and Animals
K	Materials and Motion	Trees and Weather	Animals Two by Two
PreK	Observing Nature		