FOSS

Developed at:
The Lawrence Hall of Science
UNIVERSITY OF CALIFORNIA, BERKELEY®

A science education is built one discovery at a time.

FOSS puts students first.

Every student deserves the benefits of science education—not just exposure to scientific phenomena, but the opportunity to understand and explain them. From its foundations, FOSS® is built to afford that opportunity to all, regardless of background, culture, language, or ability.

The scholars at the Lawrence Hall of Science designed FOSS around the principle of collaborative, active investigation. FOSS effectively engages all students by inviting them to interact with observable phenomena, a teaching philosophy subsequently codified with the arrival of the updated Indiana Academic Standards for Science.

FOSS lessons help teachers reach all students through phenomena that are local and relevant, and the phenomenon is framed within a logical context so that every student can recognize its significance as it is introduced. This student-centered approach ultimately honors the spirit of the standards better by ensuring that all learners can make sense of phenomena and solve problems. In this way, FOSS makes science accessible and equitable for every student in every classroom.

Comprehensive packages for complete learning.

FOSS® is more than just a science curriculum or science kit. Your investment in any FOSS module buys you all the key student and teacher components to deliver world-class science education—no minutes lost or dollars spent to provide what's been left out. Each element is thoughtfully designed to conserve your money, space, and precious time.

"My students loved experiencing the visuals and exploring the topics throughout the year. Materials were provided, including live animals!"

Adriana R., Teacher
Richmond, IN

Equipment Kit

Module and grade level kits contain permanent equipment, teacher materials, and consumables for three class uses. Durable, FOSS-exclusive equipment leads to successful investigations for all students, for class sizes up to 32 (8 groups) in repeated use.

Investigations Guide

This is the core instructional tool that supports the teacher in facilitating student investigations. Chapters include Overview, Framework and NGSS, Materials, Technology, Assessment, and each detailed Investigation. Available in print and digital.

FOSS Science Resources

In-depth articles connect students' firsthand experiences to informational text, helping students integrate different methods of acquiring data. Available in print, eBook, and audiobook.

FOSS Technology

Interactive FOSSweb on ThinkLink™ offers simulations and virtual investigations. Online activities provide differentiating instruction. Student ebooks and streaming video are also included. Comprehensive prep videos and slides support teachers.

Teacher Resources

Includes detailed alignments to Common Core ELA and Math Standards, taking FOSS outdoors, science notebook chapters, notebook masters, teacher masters,and assessment masters. Available in print and online.

Spanish Resources

Spanish editions of *FOSS Science Resources* are offered both in print and eBook. FOSSweb on ThinkLink provides audio files for *FOSS Science Resources,* as well as notebook, assessment, and teacher masters, module vocabulary and definitions, and Focus Questions.

Module Descriptions for Pre-K and Kindergarten

Observing Nature (Pre-K)

EARTH SCIENCE, LIFE SCIENCE, PHYSICAL SCIENCE

The Observing Nature Module builds understanding of the place of trees at school and in the community. Students investigate the phenomena of trees and leaves, the animals that make their home in leaf litter, the soil and rocks around the roots, and the wood that comes from trees.

Module Driving Question:

What is a tree?

Preview of Phenomena Investigated:

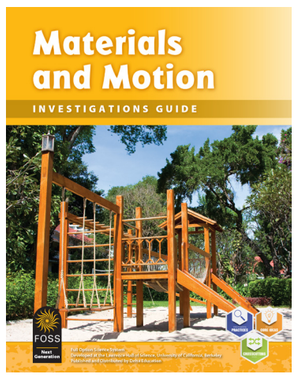
Students explore trees and leaves; earth materials, rocks, soil, and water; isopods (pill bugs and sow bugs); and wood.

Indiana Early Learning Foundations: SC1.1, SC1.2, SC2.1, SC2.2, SC3.1, SC4.1, SC5.1

Materials and Motion

PHYSICAL SCIENCE

The Materials and Motion Module provides experiences that heighten students' understanding of the physical world as they perform tests to observe properties of materials such as wood, paper, and fabric. They learn about different materials to engineer a better shade structure. Students observe and compare pushes and pulls, the speed and motion of moving objects, and collisions.



Module Driving Questions:

- What is made of wood, paper, and fabric?
- How are the properties of those useful to us?
- How can we change the motion of an object?

Preview of Phenomena Investigated:

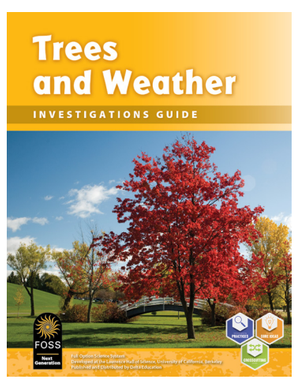
Students make sense of how common materials—wood, paper, and fabric—are defined by their properties. Students explore the motion of rolling objects and what changes their motion.

Indiana Academic Standards for Science: 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

Trees and Weather

EARTH SCIENCE

The Trees and Weather Module provides systematic investigations of trees and leaves over the seasons to bring students to a better understanding of trees' place at school and in the community. Students will observe day-to-day changes in weather over the year, as well as the impact weather has on living things.



Module Driving Questions:

- What do trees need to live and grow?
- How does weather affect trees?
- What changes do trees cause in their surroundings?

Preview of Phenomena Investigated:

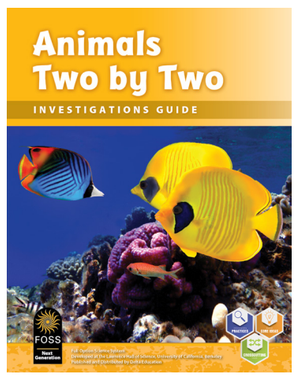
Students get to know the structures of neighborhood trees, their similarities and differences, and make sense of how trees live and grow through the seasons.

Indiana Academic Standards for Science: K-ESS2-1, K-ESS2-2, K-ESS3-1, K-ESS3-2, K-PS3-1, K-LS1-1, K-2 ETS1-2

Animals Two by Two

LIFE SCIENCE

The Animals Two by Two Module provides young students with close and personal interaction with some common land and water animals. Students observe differences in structure and behavior and learn about basic needs of animals. Living materials are not included in the kits.



Module Driving Questions:

- How are animal structures similar and different?
- What do animals need to live and grow?

Preview of Phenomena Investigated:

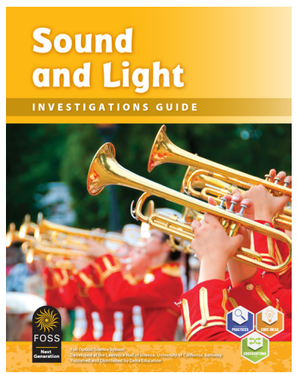
Students investigate a few common animals to make sense of the animals' survival needs.

Indiana Academic Standards for Science: K-LS1-1, K-ESS2-2, K-ESS3-1

Module Descriptions for Grade 1

Sound and Light
PHYSICAL SCIENCE

The Sound and Light Module provides students with experiences to develop an understanding of how to observe and manipulate sound and light. Students learn that sound comes from vibrating objects and develop simple models for how sound travels. With light, students find out what happens when materials with different properties are placed in a beam of light.



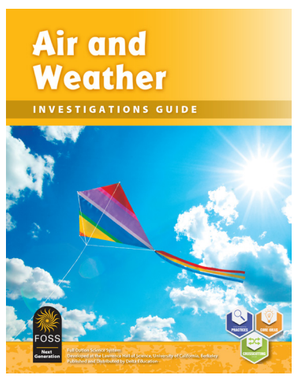
Module Driving Question:
How do sound and light interact with objects?

Preview of Phenomena Investigated:
Students manipulate vibrating objects and sources of illumination to make sense of what they produce, and how humans and other animals use sound and light.

Indiana Academic Standards for Science: 1-PS4-1, 1-PS4-2, 1-PS4-3, 1-PS4-4, K-2 ETS1-1, K-2 ETS1-2, K-2 ETS1-3

Air and Weather
EARTH SCIENCE

In the Air and Weather Module, students turn their focus upward to explore that objects in the sky change position in predictable ways. They explore the natural using tools and methods to build on their understanding of the weather and to identify patterns. They monitor changes in hours of daylight over seasons and changing weather conditions. And they find the Moon in the day and night skies, and monitor its movement over the month.



Module Driving Questions:
- What is all around us?
- What do we observe in the sky above us?

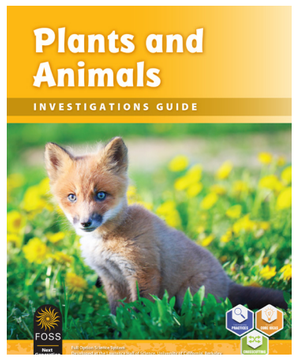
Preview of Phenomena Investigated:
Students observe and describe patterns in weather and those made by natural objects in the sky to make sense of change in their surroundings.

Indiana Academic Standards for Science: 1-ESS1-1, 1-ESS1-2, K-ESS2-1, K-ESS3-3*, 2-PS1-1*, K-2 ETS1-1, K-2 ETS1-2, K-2 ETS1-3*

* These PEs are addressed in grade K and extended in grade 1 or are foundational for grade 2

Plants and Animals
LIFE SCIENCE

The Plants and Animals Module provides experiences with structures of plants, so that students discover ways to propagate new plants from mature plants. Students build a terrarium and provide for the needs of both plants and animals living together in a classroom habitat. They explore variation in the same kind of organism, including variation between young and adults, and find out about the behaviors of parents to help their offspring survive.



Module Driving Question:
How do young plants and animals survive in their habitat?

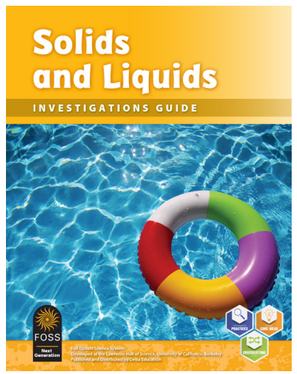
Preview of Phenomena Investigated:
Students find out about the structures and behaviors of young plants and animals (offspring) to make sense of how the young organisms grow and survive.

Indiana Academic Standards for Science: 1-LS1-1, 1-LS1-2, 1-LS3-1 ETAS: K-2 ETS1-2

Course Descriptions for Grade 2

Solids and Liquids
PHYSICAL SCIENCE

In the Solids and Liquids Module, students build on the science concepts of matter and its interactions developed in kindergarten, using new tools to enrich observations. Students observe, describe, and compare properties of solids and liquids. They conduct investigations to find out what happens when solids and water are mixed, and when liquids and water are mixed.



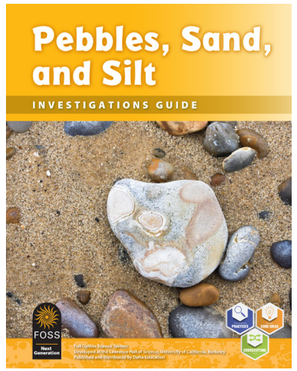
Module Driving Questions:
- How are solid and liquid materials similar and different?
- How do the properties of solid and liquid materials relate to how they can be used and how they can change?

Preview of Phenomena Investigated:
Students experience the properties of matter in two of its phases—solid and liquid—to make sense of how materials can change.

Indiana Academic Standards for Science: Physical Sciences: *2-PS1-1, 2-PS1-2, 2-PS1-3, 2-PS1-4 ETAS: K-2 ETS1-1, K-2 ETS1-2, K-2 ETS1-3*

Pebbles, Sand, and Silt
EARTH SCIENCE

The Pebbles, Sand, and Silt Module provides experiences of Earth's natural resources—rocks, soil, and water—and provides opportunities for students to engage in science and engineering practices. Students explore the natural world by using simple tools to observe and describe properties of earth materials.



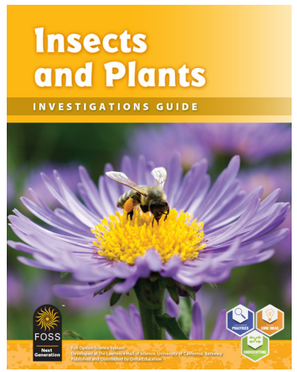
Module Driving Questions:
- What are the properties of earth materials?
- How do earth materials interact and change?

Preview of Phenomena Investigated:
Students experience common earth materials that cover the Earth's surface to make sense of how they are used and how they can change.

Indiana Academic Standards for Science: *2-ESS1-1, 2-ESS2-1, 2-ESS2-2, 2-ESS2-3, 2-PS1-1, 2-PS1-2, K-2 ETS1-1, K-2 ETS1-2, K-2 ETS1-3*

Insects and Plants
LIFE SCIENCE

The Insects and Plants Module builds understanding of growth and development of plants by observing new organisms over time. Students see the life cycles of insects unfold in real time and compare the structures and functions exhibited by each species to reveal patterns. At the same time, they grow a flowering plant in the classroom, and gain experience with the ways that plants and insects interact in feeding relationships, pollination, and seed dispersal.



Module Driving Question:
What is the natural history of some plants and animals in different habitats?

Preview of Phenomena Investigated:
Students observe patterns in the lives of insects and flowering plants as a way to make sense of the diversity of life in different habitats.

Indiana Academic Standards for Science: *3-LS1-1*, 2-LS2-1, 2-LS2-2, 2-LS4-1, K-2 ETS1-1, K-2 ETS1-2, K-2 ETS1-3*

*This PE is foundational in grade 2 and extended in grade 3

"ALL my students, including those with learning disabilities, can learn concepts and make connections to the real world around them. I routinely have former students come back to tell me they are pursuing more science at the high school and college level, in a wide variety of fields! :) "

Mary Anne F., Teacher
Haubstadt, IN

FOSS: INDIANA PRE-K–2 MODULE DESCRIPTIONS

FOSS® & DELTA EDUCATION® Pre-K–2 Recommended Scope & Sequence for Indiana

Grade	Physical Science	Earth Science	Life Science	STEM Enrichment
2	Solids and Liquids	Pebbles, Sand, and Silt	Insects and Plants	Forces in Action*
1	Sound and Light	Air and Weather	Plants and Animals	
K	Materials and Motion	Trees and Weather	Animals Two by Two	
Pre-K	Observing Nature			

*STEM modules can be purchased as a supplement to the FOSS curriculum or purchased separately for STEM electives or extracurricular activities.

Your partners in supporting quality science education.

At School Specialty, providing science curriculum is our specialty, every day of every year. We'll be right there with you, from purchase through implementation and ongoing annual professional development. Our team is supported by experienced FOSS consultants and by the program authors themselves at the Lawrence Hall of Science. We go beyond the ordinary to ensure that you have all you need to ignite your students' curiosity. With decades of combined FOSS experience, we stand ready to support your success.

Learn more.

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