

# NGSS Transition Support Guide – FOSS Template

Publisher	Kit Title	Grade Level
FOSS	Structures of Life	

Investigation 1	Classroom Instruction	Science and Engineering Practice	Crosscutting Concept	Helpful Modifications
<b>Origin of Seeds</b>	What the student does	<b>Analyzing and Interpreting Data</b> Students make observations and/or measurements to produce data to serve as the basis for an explanation of a phenomenon.	<b>Structure and Function</b> Different materials have different substructures, which can sometimes be observed.	
<b>1.1 The seed search</b>		1.1 Students represent data in a histogram to reveal patterns that indicate relationships (all fruit have seeds of some type) (p.13).	1.1 Students observe the structures of various fruits and compare their seeds (type, size and number).	1.1 Do not just tell students that beans are a fruit (p. 13). Instead, allow students to discover the properties of fruit by exploring the provided fruits.  Begin the lesson with a probing question like, “Is it a fruit?”  Give students a list of fruits and ask them to sort them into 2 columns- <i>Fruit</i> and <i>Not Fruit</i> .  Discuss and elicit students’ ideas about the criterion used to call something a fruit.  Question: “How do you know that something is a fruit?” Explore this question thoroughly before, during, and after the exploration through facilitated discourse.

<p><b>1.2</b> <b>The sprouting seed</b></p>	<p>What the student does</p>	<p>1.2 Students record their observations of sprouting seeds (p. 22)</p>	<p>1.2 N/A</p>	<p>1.2 Do not just tell students that seeds are living (p. 22). Use the investigative question or science probe, “Are Seeds Alive?” to open the lesson. If seeds are alive, then what do we need to do to get them to start growing?</p>
<p><b>1.3</b> <b>Seed soak</b></p>	<p>What the student does</p>	<p>1.3 Students measure, record and compare weight and size of seeds before and after soaking, and interpret to explain physical changes (p. 30).</p>	<p>1.3 Students separate the subsystems of a soaked seed (seed coat, cotyledon, embryo), they draw the parts as a visual model.</p>	<p>1.3 N/A</p>
<p><b>Throughout the investigation:</b></p>	<p>What the teacher does</p>	<ul style="list-style-type: none"> <li>• Teacher models how to obtain, and record data.</li> <li>• Teacher asks probing questions to facilitate interpretive thinking.</li> <li>• Teacher facilitates class discourse to analyze observations/data and develop conceptual understanding of results.</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher provides a guiding question, asks probing questions of students throughout investigation and inquiry, and facilitates class discourse to deeply explore the topic of seeds and their subsystems.</li> <li>• Teacher uses the specific language of systems, i.e. system, subsystem or <b>substructure, function.</b></li> </ul>	

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Investigation 2	Classroom Instruction	Science and Engineering Practice	Crosscutting Concept	Helpful Modifications
<b>Origin of Seeds</b>	What the student does	<b>Analyzing and Interpreting Data</b> Make observations and /or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon.	<b>Stability and Change</b> Change is measured in terms of differences over time and may occur at different rates.	
<b>2.1 Germination</b>		2.1 Students observe and record the progression of germination of different seeds to understand that seeds germinate and develop at different rates (p.11-12).	2.1 Students observe and compare rates of germination in different seeds.	2.1 Use the investigative question, “What do seeds need to live and grow?” to guide thinking and experimentation.
<b>2.2 Hydroponics</b>		2.2 NA	2.2 Students observe and compare rates of germination in different seeds.	2.2 NA
<b>2.3 Life cycle of the bean</b>		2.3 Students observe, measure, and record plant growth to record change over time and to understand that plants can grow in a medium that is not dirt (p. 20-21).	2.3 Students separate the subsystems of a soaked seed (seed coat, cotyledon, embryo), they draw the parts as a visual model.	2.3 N/A

**Throughout the investigation**

What the teacher does

- Teacher models how to obtain, and record data.
- Teacher asks probing questions to facilitate interpretive thinking.
- Teacher facilitates class discourse to analyze observations/data and develop conceptual understanding of results.
- Teacher provides a guiding question, asks probing questions of students throughout investigation and inquiry, and facilitates class discourse to deeply explore the topic of seeds and their subsystems.

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Investigation <b>3</b>	Classroom Instruction	Science and Engineering Practice	Crosscutting Concept	Necessary Modifications
<b>Meet the Crayfish</b>	What the student does	<b>Developing and using models</b> Create a model to describe and /or predict phenomena.	<b>Systems and systems models</b> A system can be described in terms of its components and their interactions.	
<b>3.1 Meet the crayfish</b>		3.1 Students represent crayfish subsystems using a labeled visual model (p. 13).	3.1 Students observe crayfish in different situations and record how their subsystems are used in response to stimuli.	3.1 Have students actually draw their visual model of the crayfish to facilitate understanding of realistic/scientific recording of specimens (instead of just handing them the copy to label).
<b>3.2 The crayfish habitat</b>		3.2 NA	3.2 NA	3.2 NA
<b>3.3 Crayfish and home</b>		3.3 NA	3.3 NA	3.3 NA

<p><b>3.4 Crayfish territory</b></p>		<p>3.4 Students use a visual model of the crayfish habitat to record and predict crayfish behavior (p. 27-29).</p>	<p>3.4 Students represent crayfish subsystems using a labeled visual model.</p>	<p>3.4 NA</p>
<p><b>Throughout the investigation:</b></p>	<p>What the teacher does</p>	<ul style="list-style-type: none"> <li>• Teacher models how to obtain, and record data.</li> <li>• Teacher asks probing questions to facilitate interpretive thinking.</li> <li>• Teacher facilitates class discourse to analyze observations/data and develop conceptual understanding of results.</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher provides a guiding question, asks probing questions of students throughout investigation and inquiry, and facilitates class discourse to deeply explore the topic of seeds and their subsystems.</li> </ul>	

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Investigation 4	Classroom Instruction	Science and Engineering Practice	Crosscutting Concept	Necessary Modifications
<b>Snail Investigations</b>	What the student does	<p><b>Planning and carrying our investigations</b></p> <p>Plan and conduct an investigation collaboratively to produce data as the basis for evidence.</p>	<p><b>Structure and Function</b></p> <p>Subsystems have shapes and parts that serve functions.</p>	
<b>4.1 Land snails at home</b>		<p>4.1</p> <p>NA</p>	<p>4.1</p> <p>NA</p>	<p>4.1</p> <p>NA</p>
<b>4.2 Comparing crayfish and snails</b>		<p>4.2</p> <p>NA</p>	<p>4.2</p> <p>Students compare crayfish and snail subsystems and their functions using a labeled visual model (p. 16-18).</p>	<p>4.2</p> <p>NA</p>
<b>4.3 The snail pull</b>		<p>4.3</p> <p>Students plan and carry out an investigation around how much weight a snail can pull. They gather data to answer the question (p. 22-23).</p> <p>Students weigh snails and washers as part of data gathering (p.23).</p>	<p>4.3</p> <p>NA</p>	<p>4.3</p> <p>Have students collaboratively design an inquiry experiment to test how much weight a snail can pull. The question may be, “Can a snail pull less than its own weight, more than its own weight, or the same amount as its weight? Have them follow the whole experimental process of question, prediction, materials,</p>

				labeled setup, procedure, data and conclusion.
<b>4.4 Choose your own investigation</b>		4.4 Students design an investigation to explore a question of their choice (p. 26-29).	4.4 NA	4.4 NA
<b>Throughout the investigation:</b>	What the teacher does	<ul style="list-style-type: none"> <li>• Teacher models how to obtain, and record data.</li> <li>• Teacher asks probing questions to facilitate interpretive thinking.</li> <li>• Teacher facilitates class discourse to analyze observations/data and develop conceptual understanding of results.</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher provides a guiding question, asks probing questions of students throughout investigation and inquiry, and facilitates class discourse to deeply explore the topic of seeds and their subsystems.</li> </ul>	