

# Grade Level Expectations (Grades 3 & 4)

## Structures of Life

DRAFT

FOSS Investigations	Essential Learning Indicators Targeted
<p><b>Investigation 1: Origin of Seeds</b> Part 1 – Seed Search Part 2 – The Sprouting Seed Part 3 – Seeds Soak</p> <p><b>Investigation 2: Growing Further</b> Part 1 – Germination Part 2 –Hydroponics Part 3 – Life Cycle of the Bean</p> <p><b>Investigation 3: Meet the Crayfish</b> Part 1 – Meet the Crayfish Part 2 – Crayfish Habitat Part 3 – Crayfish at Home Part 4 – Crayfish Territory</p> <p><b>Investigation 4: Meet the Land Snail</b> Part 1 – Land Snails at Home Part 2 – Comparing Crayfish and Snails Part 3 – The Snail Pull Part 4 – Choosing Your Own Investigation</p>	<p>*1.1.1 Understand how to use properties to sort natural and manufactured materials and objects. W (Investigation 1 only)</p> <p style="padding-left: 20px;">a Identify, describe, and sort objects and materials using observed physical properties such as...</p> <p style="padding-left: 20px;">b Sort and classify natural and manufactured materials and objects according to various physical properties.</p> <p>*1.1.6 Understand how to distinguish living from nonliving, and how to use characteristics to sort common organisms into plant and animal groups. W</p> <p style="padding-left: 20px;">a Describe the characteristics of organisms.</p> <p style="padding-left: 20px;">b Describe and sort organisms using multiple characteristics (e.g. leaves for gathering light, how plants and animals get food differently).</p> <p style="padding-left: 20px;">c <i>Classify and sort common organisms into plant and animal groups.</i></p> <p>*1.2.1 Analyze how the parts of a system go together, and how these parts depend on each other. W</p> <p style="padding-left: 20px;">a Identify the parts of a system</p> <p style="padding-left: 20px;">b Describe the function of a part of a system.</p> <p style="padding-left: 20px;">d Explain how one part of a system depends on other parts of the same system.</p> <p>*1.2.6 Understand that organisms can be a single cell or many cells that form parts with different functions. W</p> <p style="padding-left: 20px;">a <i>Observe with a microscope that living things are made mostly of cells.</i></p> <p style="padding-left: 20px;">b <i>Describe how plant and animal cells are similar and different.</i></p> <p style="padding-left: 20px;">c Describe the life function of a part of a living thing.</p> <p>*1.2.7 Understand the life cycles of plants and animals, and the differences between inherited and acquired characteristics. W (Investigations 1 &amp; 2)</p> <p style="padding-left: 20px;">a Observe and describe the life cycle of a plant or animal.</p> <p style="padding-left: 20px;">b Describe that the young of plants and animals grow to resemble their parents as they mature into adults.</p> <p style="padding-left: 20px;">c Describe inherited characteristics (e.g. seed shape)</p> <p>*1.3.8 Understand that living things need constant energy and matter. W</p> <p style="padding-left: 20px;">a Identify sources of energy and matter used by plants and animals to grow and sustain life (e.g. air, water, light, food, nutrients)</p> <p style="padding-left: 20px;">c Explain how plants and animals obtain food.</p> <p>*1.3.10 Understand that an organism’s ability to survive is influenced by the organism’s behavior and the ecosystem in which it lives. W (Investigations 3 &amp; 4)</p> <p style="padding-left: 20px;">a Describe the characteristics of organisms that allow them to survive in an ecosystem.</p> <p style="padding-left: 20px;">b Describe the role of an organism in a food chain of an ecosystem (i.e. predator, prey, consumer, producer, decomposer, scavenger)</p> <p>*2.1.1 Understand how to ask a question about objects, organisms and events in the environment. W</p> <p style="padding-left: 20px;">a Identify the question being answered in an investigation.</p> <p style="padding-left: 20px;">b Ask questions about objects, organisms and events based on observations of the natural world.</p> <p>*2.1.2 Understand how to plan and conduct a simple investigations following all safety rules. W</p> <p style="padding-left: 20px;">a Make predictions of the results of an investigation.</p> <p style="padding-left: 20px;">b Generate a logical plan, and conduct a simple controlled investigation with the following attributes; prediction, appropriate materials and tools, variables kept the same, one changed variable, measured variable, gather, record, and organize data using units, charts, and/or graphs, multiple trials.</p> <p style="padding-left: 20px;">d Identify and use simple equipment and tools (such as magnifiers, rulers, balances, scales, and thermometers) to gather data and extend the senses.</p> <p style="padding-left: 20px;">e Follow all safety rules during investigations.</p> <p>*2.1.3 Understand how to construct a reasonable explanation using evidence. W</p> <p style="padding-left: 20px;">a Generate a scientific conclusion including supporting data from an investigation.</p> <p style="padding-left: 20px;">b Describe a reason for a given conclusion using evidence from an investigation.</p> <p style="padding-left: 20px;">c Generate a scientific explanation of an observed phenomenon using given data.</p>

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	<p>*2.1.5 Understand how to report investigations and explanations of objects, events, systems, and processes. W</p> <ul style="list-style-type: none"> <li>a Report observations or data of simple investigations without making inferences.</li> <li>b Summarize an investigation by describing: reasons for selecting the investigation plan, materials used in the investigation, observations, data, results, explanations and conclusions in written, mathematical, oral, and information technology presentation formats, safety procedures used.</li> </ul> <p>*2.2.1 Understand that scientific observations are reported accurately and honestly even when the observations contradict expectations. W</p> <ul style="list-style-type: none"> <li>a Explain why scientific observations are recorded accurately and honestly.</li> <li>b Explain why scientific records of observation are not changed even when the records do not match initial expectations.</li> <li>c Explain why honest acknowledgement of the contributions of others and information sources are necessary.</li> </ul> <p>*2.2.2 Understand that scientific facts are measurements and observations of phenomena in the natural world that are repeatable and/or verified by expert scientists. W</p> <ul style="list-style-type: none"> <li>a Describe how new scientific facts are established every day.</li> <li>b Describe whether measurements and/or observations of phenomena are scientific facts.</li> <li>c Describe whether a report of an observation is a scientific fact or an interpretation.</li> </ul> <p>2.2.3 Understand why similar investigations may not produce similar results. W</p> <ul style="list-style-type: none"> <li>a Describe reasons why two similar investigations can produce different results (e.g. identify possible sources of error).</li> <li>b Explain whether sufficient information has been obtained to make a conclusion.</li> </ul> <p>2.2.4 <i>Understand how to make the results of scientific investigations reliable. W</i></p> <ul style="list-style-type: none"> <li>a <i>Describe how the method of investigation insures reliable results (i.e. reliability means that repeating an investigation gives similar results).</i></li> <li>b <i>Identify and describe ways to increase the reliability of the results of an investigation (e.g. multiple trials of an investigation increase the reliability of the results).</i></li> </ul> <p>3.1.1 Understand problems found in ordinary situations in which scientific design can be or has been used to design solutions. W (Inv2, pt 2)</p> <ul style="list-style-type: none"> <li>a Describe an appropriate question that could lead to a possible solution to a problem.</li> <li>b Describe how science and technology could be used to solve a human problem (e.g. using a controllable electric lamp as a source of light for plant growth).</li> <li>c Describe the scientific concept, principle, or process used in a solution to a human problem.</li> <li>d Describe how to scientifically gather information to develop a solution (e.g. find an acceptable information source, do an investigation and collect data).</li> </ul> <p>3.2.1 <i>Understand that science and technology have been practiced by all peoples throughout history.</i></p> <ul style="list-style-type: none"> <li>a <i>Describe how individuals of diverse backgrounds have made significant scientific discoveries or technological advances.</i></li> <li>b <i>Describe how advancements in science and technology have developed over time and with contributions from diverse people.</i></li> </ul> <p>3.2.2. <i>Understand that people have invented tools for everyday life and for scientific investigations.</i></p> <ul style="list-style-type: none"> <li>a <i>Describe tools (technology) invented to advance scientific investigations.</i></li> <li>b <i>Describe how scientific tools help people design solutions to human problems.</i></li> </ul> <p>3.2.3 <i>Understand how knowledge and skills of science, mathematics, and technology are used in common occupations.</i></p> <ul style="list-style-type: none"> <li>a <i>Identify science, math, and technology skills used in a career.</i></li> <li>b <i>Identify occupations using scientific, mathematical, and technological knowledge and skills.</i></li> </ul> <p>3.2.4 <i>Understand how humans depend on the natural environment and can cause changes in the environment that affect humans' ability to survive. W</i></p> <ul style="list-style-type: none"> <li>a <i>Describe the effects of humans on the health of an ecosystem.</i></li> <li>d <i>Describe how humans can cause changes in the environment that affect the livability of the environment for humans.</i></li> </ul>

GLEs 2 & 3 will be assessed if students are assigned inquiry or design projects to do.

\* GLEs assessed in formative assessments found in WA Assessment Folio

GLEs in italics are not currently addressed in the investigations but could be addressed with extension activities, FOSS Science Stories, and other resources.