

Komo Kulshan Outdoor School

Washington State Essential Academic Learning Requirements Science

Komo Kulshan Outdoor School supports the following Washington State Essential Academic Learning Requirements (EALRs) and Grade Level Expectations (GLEs.)

EARL 1 – SYSTEMS: The student knows and applies scientific concepts and principles to understand the properties, structure, and changes in physical, earth/space, and living systems

Component 1.2 Structure of Systems: Understand how the components, structures, and organization of systems, and the interconnections within and among systems, describe the system.

GLE/ Grades 3-5 benchmark	WASL evidence of learning – Grade 5	KKOS Activity
<p>1.2.1 Systems Approach Analyze how the parts of a simple system go together, and how these parts depend on each other.</p>	<ul style="list-style-type: none"> • Identify, describe, or explain how one part of a system depends upon other parts of the same system. • Identify, predict, or explain how a system would function if one of the parts was missing or broken. • Identify or describe the input (what goes into) and/or the output (what goes out) of a system. • Identify or describe the effect on a system when an input to the system is changed. 	<ul style="list-style-type: none"> • Riparian Forest lesson • Macroinvertebrate lesson • Water quality lesson • Hydropower lesson • Sockeye saga play • Fish Hatchery Lesson
<p>1.2.4 Core Concept: Earth System Components Understand that Earth’s system includes a mostly solid interior, landforms, bodies of water, and an atmosphere.</p>	<ul style="list-style-type: none"> • Describe how one part of Earth’s systems depends on or connects to another part of Earth’s systems (e.g., Puget Sound water affects the air over Seattle.) • Identify and describe various landmasses, bodies of water, and landforms (e.g. illustrate continents, oceans, seas, rivers, mountains, plains from a globe and a map.) 	<ul style="list-style-type: none"> • Riparian Forest/Macroinvertebrates/Water Quality, (the health of the forest affects the health of the stream.) • Reflection Day 1 (Baker River Watershed model.)

Component 1.3 Changes in Systems: Understand how interactions within and among systems cause changes in matter and energy.

GLE/ Grades 3-5 benchmark	WASL evidence of learning – 5 th grade	KKOS Activity
<p>1.3.6 Hydrosphere and Atmosphere Understand weather indicators and understand how water cycles through the atmosphere.</p>	<ul style="list-style-type: none"> • Describe the effects of water cycling through the land, oceans, and atmosphere. 	<ul style="list-style-type: none"> • Water Cycle Lesson
<p>1.3.8 Life Processes and the Flow of Matter and Energy Understand that living things need constant energy and matter.</p>	<ul style="list-style-type: none"> • Explain how plants and animals obtain food (e.g. plants make food from air, water, sunlight, mineral nutrients; animals obtain food from other living things.) 	<ul style="list-style-type: none"> • Riparian Forest Lesson • Sockeye Salmon Play
<p>1.3.10 Interdependence on Life Understand that an organism’s ability to survive is influenced by the organism’s behavior and the ecosystem in which it lives.</p>	<ul style="list-style-type: none"> • Describe how an organism’s ability to survive is affected by a change in an ecosystem (e.g. The loss of one organism in a food chain affects all other organisms in that food chain). • Describe the path of a substance (i.e., air, water, mineral nutrients) through a food chain. 	<ul style="list-style-type: none"> • Riparian Forest Lesson • Macroinvertebrate Lesson • Water Quality Lesson • Sockeye Salmon Play

EARL 2: Inquiry in Science: The student knows and applies the skills, processes, and the nature of scientific inquiry.

Component 2.1 Investigating Systems: Develop the knowledge and skills necessary to do scientific inquiry.

GLE/ Grades 3- 5 benchmark	WASL evidence of learning – 5 th grade	KKOS Activity
<p>2.1.1 Questioning Understand how to ask a question about objects, organisms, and events in the environment.</p>	<ul style="list-style-type: none"> • Identify the question being answered in an investigation • Ask questions about objects, organisms, and events based on observations of the natural world • Develop a new question that can be investigated with the same materials and/or data as a given investigation. 	<ul style="list-style-type: none"> • Macroinvertebrate Lesson • Water Quality Lesson
<p>2.1.2 Understand how to plan and conduct simple investigations following all safety rules.</p>	<ul style="list-style-type: none"> • Make predictions of the results of an investigation. • Generate a logical plan for, and conduct a simple controlled investigation with the following attributes - <ul style="list-style-type: none"> Prediction Appropriate materials, tools, and available computer technology Variables kept the same (controlled) One changed variable (manipulated) Gather, record, and organize data using appropriate units, charts, and/or graphs Multiple trials. • Generate a logical plan for a simple field investigation with the following attributes <ul style="list-style-type: none"> Identify multiple variables Select observable or measurable variables related to the investigative question. • Identify and use simple equipment and tools, (such as magnifiers, rulers, thermometers) to gather data and extend the senses. • Follow all safety rules during investigations. 	<ul style="list-style-type: none"> • Macroinvertebrate/water quality lesson
<p>2.1.3 Explaining Understand how to construct a reasonable explanation using evidence.</p>	<ul style="list-style-type: none"> • Generate a scientific conclusion supporting data from an investigation. • Describe a reason for a given conclusion using evidence from an investigation. • Generate a scientific explanation of observed phenomena using given data. • Predict what logically might occur if an investigation lasted longer or was changed. 	<ul style="list-style-type: none"> • Macroinvertebrate/ water quality lesson

Component 2.2 Nature of Science: Understand the nature of scientific inquiry

GLE/ Grades 3- 5 benchmark	WASL evidence of learning – 5 th grade	KKOS Activity
<p>2.2.1 Intellectual Honesty Understand that all scientific observations are reported accurately and honestly even when the observations contradict expectations.</p>	<ul style="list-style-type: none"> • Explain why scientific observations are recorded accurately and honestly. • Explain why scientific records of observations are not changed even when the records do not match initial expectations. • Explain why honest acknowledgement of the contributions of others and information sources are necessary. 	<ul style="list-style-type: none"> • Macroinvertebrate/water quality lesson.
<p>2.2.3. Evaluating Inconsistent Results Understand why similar investigations may not produce similar results.</p>	<ul style="list-style-type: none"> • Describe reasons why two similar investigations can produce different results (e.g. identify possible sources of error.) • Explain whether sufficient information has been obtained to make a conclusion. 	<ul style="list-style-type: none"> • Macroinvertebrate / water quality lesson.
<p>2.2.4 Evaluating Methods of Investigation Understand how to make the results of scientific investigations reliable.</p>	<ul style="list-style-type: none"> • Describe how the method of investigation insures reliable results (i.e. reliability means that repeating an investigation gives similar results). • 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.) 	<ul style="list-style-type: none"> • Macroinvertebrate / water quality lesson.

EALR 3 Application of Science: The student knows and applies science concepts and skills to develop solutions to human problems in societal contexts.

Component 3.1 Designing Solutions: Apply knowledge and skills of science and technology to design solutions to human problems or meet challenges.

GLE / Grades 3-5 benchmark	WASL evidence of learning – 5 th Grade	KKOS Activity
<p>3.1.1. Identifying Problems Understand problems found in ordinary situations in which scientific design can be or have been used to design solutions.</p>	<ul style="list-style-type: none"> • Describe an appropriate question that could lead to a possible solution to a problem. • Describe how science and technology could be used to solve a human problem. • Describe the scientific concept, principal, or process used in a solution to a human problem. • Describe how to scientifically gather information to develop a solution. 	<ul style="list-style-type: none"> • Hydropower lesson • Fish Hatchery lesson • Sockeye Sage Play • Reflection time

Component 3.2 Science, Technology and Society: Analyze how science and technology are human endeavors, interrelated to each other, society, the workplace, and the environment.

GLE / Grades 3-5 benchmark	WASL evidence of learning – 5 th Grade	KKOS Activity
<p>3.2.2. Relationship of Science and Technology Understand that people have invented tools for everyday life and for scientific investigations.</p>	<ul style="list-style-type: none"> • Describe how common tools help people design ways to adapt to different environments. • Describe how scientific ideas and discoveries are used to design solutions to human problems, extend human ability, or help humans adapt to different environments. 	<ul style="list-style-type: none"> • “What WOOD we do without it?” lesson • Tree of Life lesson • Hydropower lesson • Fish Hatchery lesson
<p>3.2.3. Careers and Occupations Using Science, Mathematics, and Technology Understand how knowledge and skills of science, mathematics, and technology are used in common occupations.</p>	<ul style="list-style-type: none"> • Identify science, math, and technology skills used in a career. • Identify occupations using scientific, mathematical, and technological knowledge and skills. 	<ul style="list-style-type: none"> • Fish Hatchery lesson • Hydropower lesson.
<p>3.2.4 Environmental and Resource Issues Understand how humans depend on the natural environment and can cause changes in the environment that affect humans’ ability to survive.</p>	<ul style="list-style-type: none"> • Describe how resources can be conserved through reusing, reducing, and recycling. • Describe the effects conservation has on the environment. • Describe the effects of humans on the health of an ecosystem. • Describe how humans can cause changes in the environment that affect the livability of the environment for humans. • Describe the limited resources humans depend on and how changes in these resources affect the livability of the environment for humans. 	<ul style="list-style-type: none"> • Make-a-meal Lesson • Hydropower lesson • “What Wood we do without it?” Lesson • Tree of Life Lesson • Sockeye Saga Play • “The Lorax” Lesson. • Post-trip Lesson