

Idaho Partners - Science Standards for Grades 3-4

The Idaho GLOBE Partnership
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72. SCIENCE STANDARDS - GRADES 3-4, SECTIONS 573 THROUGH 583.

The samples associated with the content standards are meant to illustrate meaning and to represent possible areas of applications. They are not intended to be an exhaustive list, but are samples of applications that would demonstrate learning.

73. UNIFYING CONCEPTS OF SCIENCE.

Standard - The student will:	Content Knowledge and Skills:	Samples of Applications:
1. Understand systems, order, and organization.	a. Recognize that a system is an organized group of related objects that form a whole.	1. Show how animals and plants rely on one another for oxygen/carbon dioxide. 2. Water cycle

	b. Explore the solar system.	1. 1. 1. Landsat Images
1. Understand concepts and processes of evidence, models, and explanation.	1. Develop skills in observation and data collection.	1. Adopt-A-Tree: predict, observe, and record changes throughout the year. 2. Seasons activity
	1. Recognize the difference between observations and inferences.	1. 1. Hydrology Investigation: observe clear water and see if it is clean or not.
	1. Develop and/or use models to explain how things work.	1. Water Cycle
1. Understand constancy, change, and measurement.	1. Explore concepts in science that do not change with time.	
	• Understand that changes	1. Track the sun. Measure or trace

	occur and can be measured.	shadows throughout the day. (Solar Noon Activity) 2. Record and predict the daily temperature.
	<ul style="list-style-type: none"> Measure in both the standard and metric systems. 	1. Measure temperature in Fahrenheit and Celsius.
1. Understand the theory that evolution is a process that relates to the gradual changes in the universe and of equilibrium as a physical state.	1. Understand the relationships of past, present, and future.	<ol style="list-style-type: none"> Water cycle Soil investigations
1. Understand concepts of form and function.	1. Discover the relationship between shape and use.	1. GLOBE bird investigation (beaks)

74. CONCEPTS OF SCIENTIFIC INQUIRY.

Standard - The student will:	Content Knowledge and Skills:	Samples of Applications:
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<p>1. Understand scientific inquiry and develop critical thinking skills.</p>	<p>1. Identify questions that can be answered by conducting scientific tests.</p>	<p>1. GLOBE student research projects</p>
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	<p>1. Conduct scientific tests.</p>	<p>1. GLOBE student research projects 2. Macro invertebrate study at different sites 3. GLOBE bird investigation at different sites</p>
	<p>1. Use appropriate tools and techniques to gather and display data.</p>	<p>1. Given an assortment of GLOBE tools, students will choose the appropriate tool(s) to measure and weigh an object and record data.</p>
	<p>1. Use data to construct a reasonable explanation.</p>	<p>1. Analyze GLOBE data by:</p> <ul style="list-style-type: none"> • graphing • class discussion
	<p>1. Make simple predictions based on data.</p>	<p>1. Predicting data based off GLOBE atmosphere protocols</p>
	<p>1. Explore alternative explanations.</p>	<p>1. Discuss alternate methods and designs that could be used to achieve more successful results.</p>

	<p>1. Communicate the results of tests to others.</p>	<p>1. Share design with the class by posting on GLOBE website 2. Compare results on GLOBE website.</p>
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75. CONCEPTS OF PHYSICAL SCIENCE.

Standard - The student will:	Content Knowledge and Skills:	Samples of Applications:
<p>1. Understand the structure and function of matter and molecules and their interactions.</p>	<p>1. Use simple instruments to measure properties.</p>	<p>1. Thermometers 2. Graduate cylinders</p>
	<ul style="list-style-type: none"> Explore the properties of solids, liquids, and gases. 	<p>1. Water detectives 2. Compare GLOBE atmosphere protocols for Winter and Summer</p>
	<ul style="list-style-type: none"> Know that heating and cooling can cause changes of state in common materials. 	<p>1. Seasons Investigations</p>

1. Understand concepts of motion and forces.	1. Investigate the effect of pull/push on the motion and direction of objects.	n/a
	<ul style="list-style-type: none"> Recognize different forms of energy. 	n/a
	<ul style="list-style-type: none"> Explore and investigate the six simple machines: demonstrate that the six simple machines can decrease the amount of force necessary to complete a task. 	n/a
1. Understand the total energy in the universe is constant.	<ol style="list-style-type: none"> 1. Compare and contrast potential and kinetic energy. 	n/a

75. CELLULAR AND MOLECULAR CONCEPTS.

Cellular and Molecular Concepts standards do not apply at this grade level.

77. INTERDEPENDENCE OF ORGANISMS AND BIOLOGICAL CHANGE.

Standard - The student will:	Content Knowledge and Skills:	Samples of Applications:
1. Understand the theory of biological evolution.	1. Investigate diversity of plants and animals and how they adapt in order to survive in their environment.	1. Macro invertebrate study 2. GLOBE bird investigation
	<ul style="list-style-type: none"> • Investigate how plants and animals become extinct if their adaptations do not fit their environment. 	1. Macro invertebrate study 2. GLOBE bird investigation 3. GLOBE landcover activities
	<ul style="list-style-type: none"> • Recognize the difference between vertebrate and invertebrate animals: classify vertebrate animals (mammals, reptiles, birds, fish, amphibians). 	1. Macro invertebrate study 2. GLOBE bird investigation.

78. MATTER, ENERGY, AND ORGANIZATION IN LIVING SYSTEMS.

Standard - The student will:	Content Knowledge and Skills:	Samples of Applications:
1. Understand the relationship	1. Know that living systems	1.

<p>between matter, energy, and organization to trace matter as it cycles and energy as it flows through living systems and between living systems and the environment.</p>	<p>require energy to survive.</p>	<ol style="list-style-type: none"> 1. Learn about different systems that keep a tree alive ("Project Learning Tree," Tree Factory). 2. Identify the components of a habitat and the basic need for them ("Project Wild," Habitat Lap Sit Activity). 3. Choose an animal in your hydrology site and create a diorama or mobile of that animal in their habitat keeping in mind their needs.
	<ol style="list-style-type: none"> 1. Understand the food chain and know that organisms both cooperate and compete in ecosystems. 	<ol style="list-style-type: none"> 1. <ol style="list-style-type: none"> 1. Macro invertebrate study 2. GLOBE bird activity

79. EARTH AND SPACE SYSTEMS.

Standard - The student will:	Content Knowledge and Skills:	Samples of Applications:
<p>1. Understand scientific theories of origin and subsequent changes in the universe and earth systems.</p>	<p>1. Explore the length of a day, the seasons, the year, phases of the moon, and eclipses.</p>	<p>1. GLOBE Seasons activities 2. GLOBE Atmosphere activities 3. Solar noon activity</p>
	<ul style="list-style-type: none"> • Compare and contrast the contents of the solar system. 	<p>n/a</p>
	<ul style="list-style-type: none"> • Explore the effect of gravity on the solar system; include elements within the solar system such as the Earth, Moon and tides. 	<p>n/a</p>

79. TECHNOLOGY.

Standard - The student will:	Content Knowledge and Skills:	Samples of Applications:

<p>1. Understand the relationship between science and technology and develop the abilities of technological design and application.</p>	<p>1. Know that technology is the means by which people use knowledge, tools, and systems to make their lives easier and better.</p>	<p>1. Explore the history of the microscope, telescope, telephone, computer, and how advances in technology has improved the device. 2. Tree versus computer.</p>
	<p>1. Recognize that people have invented tools for everyday life and for scientific investigations.</p>	<p>1. Choose an invention, write about the inventor, and describe any advances that have improved the invention and everyday life.</p>
	<p>1. Create a tool to perform a specific function.</p>	<p>1. 1. Tubular densiometer 2. 45 degree clinometers</p>
	<p>1. Use available and appropriate technology.</p>	<p>1. 1. Use GLOBE website 2. Use 45 degree clinometer for finding the height of a tree</p>

79. **PERSONAL AND SOCIAL PERSPECTIVES.**

Standard - The student will:	Content Knowledge and Skills:	Samples of Applications:
<p>1. Understand common environmental quality issues, both natural and human induced.</p>	<p>1. Identify issues in the local environment.</p>	<ol style="list-style-type: none"> 1. Collect newspaper and magazine articles. 2. Make a current issue's bulletin board. 3. Discuss issues and possible solutions. 4. Write a letter to government representatives or the newspaper. 5. Write a letter to GLOBE Scientists.
<p>1. Understand the causes and effects of population change.</p>	<p>1. Understand the effect of technological development and human population growth on local towns and/or Idaho.</p>	<ol style="list-style-type: none"> 1. Students examine LandSat images from around the world 2. Students use the NASA Earth at Night Image to estimate population
<p>1. Understand the importance of natural resources and the need to</p>	<p>1. Understand the concept of recycling.</p>	<ol style="list-style-type: none"> 1. Participate in a recycling program.

<p>manage and conserve them.</p>		<ol style="list-style-type: none"> 2. Field trip to a recycling center. 3. Make your own recycled paper. 4. Build a compost pile. 5. Make things (planters, bird feeders, mobiles, toys) using recyclable materials.
	<ol style="list-style-type: none"> 1. Understand the conservation of natural resources. 	<ol style="list-style-type: none"> 1. Measure classroom and home resource use (how much water to wash hands, brush teeth, drinking). 2. Guest speakers from various natural resource and conservation professions.
<ol style="list-style-type: none"> 1. Understand different uses of technology in science and how they affect our standard of living. 	<ol style="list-style-type: none"> 1. Identify examples of technologies used in scientific fields. 	<ol style="list-style-type: none"> 1. Brainstorm what technologies are used in a particular field (2. Guest speaker from above to describe technology used.

		Compare brainstorm results with actual technology used.
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79. HISTORY OF SCIENCE.

Standard - The student will:	Content Knowledge and Skills:	Samples of Applications:
1. Understand the significance of major scientific milestones.	1. Understand major contributions of various scientists and researchers.	i. Scientists Corner

79. INTERDISCIPLINARY CONCEPTS.

Standard - The student will:	Content Knowledge and Skills:	Samples of Applications:
1. Understand that interpersonal relationships are important in scientific endeavors.	1. Work in teams to solve problems.	1. Give a task to perform individually and as a group (GLOBE protocols). 2. Student Research Projects

1. Understand technical communication.	1. Read and understand instructions.	1. Give students a GLOBE Protocol to follow and compare results.
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584. -- 586. (RESERVED).

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