



## North Carolina Essential Standards K-2 Science

Note on Numbering:

*Physical Science (P) Earth Science (E) Life Science (L)*

The North Carolina Science Essential Standards maintain the respect for local control of each Local Education Authority (LEA) to design the specific curricular and instructional strategies that best deliver the content to their students. Nonetheless, engaging students in inquiry-based instruction is a critical way of developing conceptual understanding of the science content that is vital for success in the twenty-first century. The process of scientific inquiry, experimentation and technological design should not be taught nor tested in isolation of the core concepts drawn from physical science, earth science and life science. A seamless integration of science content, scientific inquiry, experimentation and technological design will reinforce in students the notion that "what" is known is inextricably tied to "how" it is known. A well-planned science curriculum provides opportunities for inquiry, experimentation and technological design. Teachers, when teaching science, should provide opportunities for students to engage in "hands-on/minds-on" activities that are exemplars of scientific inquiry, experimentation and technological design.

### Kindergarten

#### Science as Inquiry

Research shows that young students work well in a cooperative learning environment. Students should be actively involved in exploring phenomena in the natural world posing questions and seeking answers as they arise. Students develop simple skills of observation, measurement and number sense as they actively participate in simple investigations. During investigations, students must have opportunity to use tools such as magnifiers, thermometers, rulers, or balances to gather data and extend their senses. They must have ample time to talk about their observations and compare their observations with those of others. They should be encouraged to employ oral language, drawings and models to communicate results and explanations of investigations and experiments. In a cooperative learning environment, students learn that when people give different descriptions of the same thing, it is better to make new observations instead of debating about who is correct. Students must always use appropriate safety procedures, including listening skills, when conducting simple investigations.

## Forces and Motion

	Essential Standard	Clarifying Objectives	
<b>K.P.1</b>	<b>Understand the positions and motions of objects and organisms observed in the environment.</b>	K.P.1.1	Compare the relative position of various objects observed in the classroom and outside using position words such as: in front of, behind, between, on top of, under, above, below and beside.
		K.P.1.2	Give examples of different ways objects and organisms move (to include falling to the ground when dropped ): <ul style="list-style-type: none"> <li>• Straight</li> <li>• Zigzag</li> <li>• Round and round</li> </ul>

	Essential Standard	Clarifying Objectives	
			<ul style="list-style-type: none"> <li>• Back and forth</li> <li>• Fast and slow</li> </ul>

### Matter: Properties and Change

	Essential Standard	Clarifying Objectives	
<b>K.P.2</b>	<b>Understand how objects are described based on their physical properties and how they are used.</b>	K.P.2.1	Classify objects by observable physical properties (including size, color, shape, texture, weight and flexibility).
		K.P.2.2	Compare the observable physical properties of different kinds of materials (clay, wood, cloth, paper, etc) from which objects are made and how they are used.

### Earth Systems, Structures and Processes

	Essential Standard	Clarifying Objectives	
<b>K.E.1</b>	<b>Understand change and observable patterns of weather that occur from day to day and throughout the year.</b>	K.E.1.1	Infer that change is something that happens to many things in the environment based on observations made using one or more of their senses.
		K.E.1.2	Summarize daily weather conditions noting changes that occur from day to day and throughout the year.
		K.E.1.3	Compare weather patterns that occur from season to season.

### Structures and Functions of Living Organisms

	Essential Standard	Clarifying Objectives	
<b>K.L.1</b>	<b>Compare characteristics of animals that make them alike and different from other animals and nonliving things.</b>	K.L.1.1	Compare different types of the same animal (i.e. different types of dogs, different types of cats, etc.) to determine individual differences within a particular type of animal.
		K.L.1.2	Compare characteristics of living and nonliving things in terms of their: <ul style="list-style-type: none"> <li>• Structure</li> <li>• Growth</li> </ul>

	Essential Standard	Clarifying Objectives	
			<ul style="list-style-type: none"> <li>• Changes</li> <li>• Movement</li> <li>• Basic needs</li> </ul>

## 1<sup>st</sup> Grade

### Science as Inquiry

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## Forces and Motion

	Essential Standard	Clarifying Objectives	
<b>1.P.1</b>	<b>Understand how forces (pushes or pulls) affect the motion of an object.</b>	1.P.1.1	Explain the importance of a push or pull to changing the motion of an object.
		1.P.1.2	Explain how some forces (pushes and pulls) can be used to make things move without touching them, such as magnets.
		1.P.1.3	Predict the effect of a given force on the motion of an object, including balanced forces.

### Earth in the Universe

	Essential Standard	Clarifying Objectives	
1.E.1	<b>Recognize the features and patterns of the earth/moon/sun system as observed from Earth.</b>	1.E.1.1	Recognize differences in the features of the day and night sky and apparent movement of objects across the sky as observed from Earth.
		1.E.1.2	Recognize patterns of observable changes in the Moon's appearance from day to day.

### Earth Systems, Structures and Processes

	Essential Standard	Clarifying Objectives	
1.E.2	<b>Understand the physical properties of Earth materials that make them useful in different ways.</b>	1.E.2.1	Summarize the physical properties of Earth materials, including rocks, minerals, soils and water that make them useful in different ways.
		1.E.2.2	Compare the properties of soil samples from different places relating their capacity to retain water, nourish and support the growth of certain plants.

### Ecosystems

	Essential Standard	Clarifying Objectives	
1.L.1	<b>Understand characteristics of various environments and behaviors of humans that enable plants and animals to survive.</b>	1.L.1.1	Recognize that plants and animals need air, water, light (plants only), space, food and shelter and that these may be found in their environment.
		1.L.1.2	Give examples of how the needs of different plants and animals can be met by their environments in North Carolina or different places throughout the world.
		1.L.1.3	Summarize ways that humans protect their environment and/or improve conditions for the growth of the plants and animals that live there (e.g., reuse or recycle products to avoid littering).

## Molecular Biology

	Essential Standard	Clarifying Objectives	
<b>1.L.2</b>	<b>Summarize the needs of living organisms for energy and growth.</b>	1.L.2.1	Summarize the basic needs of a variety of different plants (including air, water, nutrients, and light) for energy and growth.
		1.L.2.2	Summarize the basic needs of a variety of different animals (including air, water, and food) for energy and growth.

### 2<sup>nd</sup> Grade

#### Science as Inquiry

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## Forces and Motion

	Essential Standard	Clarifying Objectives	
<b>2.P.1</b>	<b>Understand the relationship between sound and vibrating objects.</b>	2.P.1.1	Illustrate how sound is produced by vibrating objects and columns of air.
		2.P.1.2	Summarize the relationship between sound and objects of the body that vibrate – eardrum and vocal cords.

### Matter: Properties and Change

	Essential Standard	Clarifying Objectives	
2.P.2	<b>Understand properties of solids and liquids and the changes they undergo.</b>	2.P.2.1	Give examples of matter that change from a solid to a liquid and from a liquid to a solid by heating and cooling.
		2.P.2.2	Compare the amount (volume and weight) of water in a container before and after freezing.
		2.P.2.3	Compare what happens to water left in an open container over time as to water left in a closed container.

### Earth Systems, Structures and Processes

	Essential Standard	Clarifying Objectives	
2.E.1	<b>Understand patterns of weather and factors that affect weather.</b>	2.E.1.1	Summarize how energy from the sun serves as a source of light that warms the land, air and water.
		2.E.1.2	Summarize weather conditions using qualitative and quantitative measures to describe: <ul style="list-style-type: none"> <li>• Temperature</li> <li>• Wind direction</li> <li>• Wind speed</li> <li>• Precipitation</li> </ul>
		2.E.1.3	Compare weather patterns that occur over time and relate observable patterns to time of day and time of year.
		2.E.1.4	Recognize the tools that scientists use for observing, recording, and predicting weather changes from day to day and during the seasons.

### Structures and Functions of Living Organisms

	Essential Standard	Clarifying Objectives	
2.L.1	<b>Understand animal life cycles.</b>	2.L.1.1	Summarize the life cycle of animals: <ul style="list-style-type: none"> <li>• Birth</li> <li>• Developing into an adult</li> <li>• Reproducing</li> <li>• Aging and death</li> </ul>
		2.L.1.2	Compare life cycles of different animals such as, but not limited to, mealworms, ladybugs, crickets, guppies or frogs.

## Evolution and Genetics

	Essential Standard	Clarifying Objectives	
2.L.2	<b>Remember that organisms differ from or are similar to their parents based on the characteristics of the organism.</b>	2.L.2.1	Identify ways in which many plants and animals closely resemble their parents in observed appearance and ways they are different.
		2.L.2.2	Recognize that there is variation among individuals that are related.