



North Carolina Department of Public Instruction

## **INSTRUCTIONAL SUPPORT TOOLS**

FOR ACHIEVING NEW STANDARDS

This document is designed to help North Carolina educators teach the Essential Standards (Standard Course of Study). NCDPI staff are continually updating and improving these tools to better serve teachers.

### *Essential Standards: Grade 2 Science* • Unpacked Content

For the Essential Standards that will be effective in all North Carolina schools in the 2012-13 school year.

#### **What is the purpose of this document?**

To increase student achievement by ensuring educators understand specifically what the new standards mean a student must know, understand and be able to do.

#### **What is in the document?**

Descriptions of what each standard means a student will know, understand and be able to do. The “unpacking” of the standards done in this document is an effort to answer a simple question “What does this standard mean that a student must know and be able to do?” and to ensure the description is helpful, specific and comprehensive for educators.

#### **How do I send Feedback?**

We intend the explanations and examples in this document to be helpful and specific. That said, we believe that as this document is used, teachers and educators will find ways in which the unpacking can be improved and made ever more useful. Please send feedback to us at [feedback@dpi.state.nc.us](mailto:feedback@dpi.state.nc.us) and we will use your input to refine our unpacking of the standards. Thank You!

#### **Just want the standards alone?**

You can find the standards alone at <http://www.ncpublicschools.org/docs/acre/standards/phase1/science/k-2.pdf>.

# Forces and Motion

## Essential Standard and Clarifying Objectives

### **2.P.1 Understand the relationship between sound and vibrating objects.**

- 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.

## Unpacking

What does this standard mean a child will know, understand and be able to do?

### 2.P.1.1

Students know that vibrating objects produce sound. Students know that sound can be described in terms of pitch, which may be higher or lower. Students know that the length of an air column determines if its pitch is high or low. Students know that the shorter the air column is, the higher the pitch is. Students also know that the longer the air column is, the lower the pitch.

### 2.P.1.2

Students know parts of the body vibrate in order to produce and receive sound. Our voices produce sound when air from the lungs passes over our vocal cords and makes them vibrate. The pitch and volume of the sounds humans can produce are changed by changing the properties of the vocal cords. Students know that sound waves are collected by the outer ear, which helps to funnel sound to the eardrum. The eardrum vibrates when sound waves hit it, and causes the tiny bones in the middle ear to vibrate as well. The vibrations move through the bones to the inner ear where the sounds are changed into a form that is understood by the brain.

## Matter: Properties and Change

### Essential Standard and Clarifying Objectives

#### **2.P.2 Understand properties of solids and liquids and the changes they undergo.**

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.

### Unpacking

What does this standard mean a child will know, understand and be able to do?

#### 2.P.2.1

Students know that solids are materials that maintain their own shapes, while liquids tend to assume the shapes of their containers. Students know examples of materials that can be classified as solid and materials that can be classified as liquid. Students know water can be a liquid or a solid and can go back and forth from one form to the other when heat is added or removed. (Other examples include: candle wax, shortening, rock/lava). Students know things can be done to materials to change some of their properties, but not all materials respond the same way to what is done to them.

#### 2.P.2.2

Students know how to measure and compare the volume of a liquid poured into different containers. Students know how to measure and compare the weight of water poured into different containers. Students know if water is turned into ice and then the ice is allowed to melt, the amount of water is the same as it was before freezing.

#### 2.P.2.3

Students know how to measure and compare the volume of liquid poured into different containers. Students know that a container of water left open will contain less water over time, while a closed container of water will not change.

## Earth Systems, Structures and Processes

### Essential Standard and Clarifying Objectives

#### 2.E.1 Understand patterns of weather and factors that affect weather.

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:

- Temperature
- Wind direction
- Wind speed
- Precipitation

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.

### Unpacking

What does this standard mean a child will know, understand and be able to do?

#### 2.E.1.1

Students know that light travels from the sun to the earth. Some of this light is reflected back into space, some is absorbed by the land, water, and air.

#### 2.E.1.2

Students know that numbers are used to describe air temperature, wind speed, and the amount of precipitation that occurs. Students know that wind direction is described using cardinal directions (N, S, E, W) and numbers. Students know how to measure air temperature with a thermometer, wind direction with a wind sock or vane, wind speed with an anemometer, and precipitation with a rain gauge.

**2.E.1.3**

Students know that over time there are patterns that can be observed in the weather and that these patterns are influenced by the time of day (cooler morning, warmer afternoon) and the time of year (seasonal changes).

**2.E.1.4**

Students are familiar with manual and electronic weather instruments, sensors, and computers as well as how they can produce a ‘running record’ of weather changes that occur over time by collecting and recording data. This collection of data can be analyzed as a basis for predicting weather trends.

## Structures and Functions of Living Organisms

### Essential Standard and Clarifying Objectives

**2.L.1 Understand animal life cycles.**

2.L.1.1 Summarize the life cycle of animals including:

- Birth
- Developing into an adult
- Reproducing
- Aging and death

2.L.1.2 Compare life cycles of different animals such as, but not limited to, mealworms, ladybugs, crickets, guppies or frogs.

### Unpacking

What does this standard mean a child will know, understand and be able to do?

**2.L.1.1**

Students know that animals experience a cycle of life which begins with birth, then a period of time in which the animal develops into an adult. At adulthood, animals reproduce in order to sustain their species. In nature, all animals are programmed to age and eventually die. The details of the life cycle are different for specific animals.

#### 2.L.1.2

Students know that different animals spend varying periods of time in each stage of the life cycle and that some animals have few stages, while others have several. Students know that animals might look the same, similar, or completely different at specific stages of development. Students know that animals may have varied needs at different stages of development, and may occupy unique habitats according to these needs.

## Evolution and Genetics

### Essential Standard and Clarifying Objectives

#### **2.L.2 Remember that organisms differ from or are similar to their parents based on the characteristics of the organism.**

- 2.L.2.1 Identify ways in which 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.

### Unpacking

What does this standard mean a child will know, understand and be able to do?

#### 2.L.2.1

Students know that plants and animals resemble their parents in appearance, needs, life processes, and interactions with the environment, even while being unique.

2.L.2.2

Students know that groups of organisms of the same type have characteristics in common as well as characteristics that may vary.