Science Grade 5 Curriculum Guide

West Contra Costa Unified School District

- Pacing is based on current (2016) version of Draft California Science Framework
  - http://www.cde.ca.gov/ci/sc/cf/scifw2nd60daypubreview.asp
- Textbook: Scott Foresman. California Science. © 2008.

Instructional Segments

1. **What is Matter Made of?**

   Students observe different materials and describe their differences. They investigate how materials change when they mix together. They learn to recognize chemical reactions and develop a model of matter being made of particles. These particles move and their arrangement changes, but their mass always stays the same.

2. **From Matter to Organisms**

   Students make models that trace the flow of energy and matter in ecosystems. They investigate the needs of plants and gather evidence that all organisms produce waste. They explain how animals depend upon one another as components in an interconnected system.

3. **Interacting Earth Systems**

   Students make models of the flow of energy and matter at the scale of the entire planet, and obtain information about a few example phenomena. They describe these phenomena in terms of interactions between different systems within the broader Earth system. They use their models to understand how humans impact these systems and develop solutions to minimize these effects.

4. **Patterns in the Night Sky**

   Students ask questions and wonder about the night sky. They investigate the force of gravity and then analyze data to identify patterns related to Earth's motion. They gather evidence and make models showing that the brightness of a star depends on its distance from Earth.

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Instructional Segment	**Guiding Questions**	**Phenomena**	**Performance Expectation**	**Suggested Lessons/Activities**	**Resources**
1. What is Matter Made of?	What causes different materials to have different properties?	Use familiar materials with different properties, such as baking soda and other powders, metals such as aluminum and steel, rocks and minerals, and liquids.	**5-PS1-3** **Make observations and measurements to identify materials based on their properties.**	• What are properties? • Make qualitative observations and measurements. • Plan an investigation to collect data: for quantitative measurements (i.e. grams, mm), observations: color, conductivity, reflection, or determine conductivity, magnetic attraction • Students describe how the observations and measurements they make will allow them to identify materials based on their properties.	Textbook p. 9-11; What are properties of Matter? Physical and Chemical Framework Chapter 4 p. 114-115, 120 Evidence Statement

Instructional Segment	Guiding Questions	Phenomena	Performance Expectation	Suggested Topics/Activities	Resources
1. **What is Matter Made of?** ***continued***	How do materials change when they dissolve, evaporate, melt, or mix together?	Separating a mixture into its component parts, using filters, magnets, buoyancy (wood floats), etc.	**5-PS1-4** **Conduct an investigation to determine whether the mixing of two or more substances results in new substances.**	• Examples of combinations that do not produce new substances could include sand and water. • Examples of combinations that do produce new substances could include baking soda and vinegar or milk and vinegar	Textbook p. 26, How can we separate Mixtures? p. 32, How can Properties help Separate a Mixture? **FOSS: Mixtures & Solutions** Investigation 1 Making and Separating Mixtures

Instructional Segment	Guiding Questions	Phenomena	Performance Expectation	Suggested Topics/Activities	Resources
1. **What is Matter Made of?** ***continued***	How do materials change when they dissolve, evaporate, melt, or mix together? *continued*	Freezing or melting water changes its form, but not its mass. An amount of coconut oil has the same mass whether it is solid or liquid. Making a solution such as saltwater or Kool-Aid or sparkling water.	**5-PS1-2** **Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.**	• Compare the mass of substances before and after a change or reaction (to describe that the total weights of the substances did not change, regardless of the reaction or changes in properties that were observed) • Describe the changes in properties they observe during and/or after heating, cooling, or mixing substances. • What is a solution? Solutions are special mixtures where one substance has dissolved – seems to have disappeared. Some ways to separate solutions are: heating, cooling, evaporating or by adding another chemical.	Textbook p. 55, Conservation of Matter **FOSS: Mixtures & Solutions** Investigation 1: Making and Separating Mixtures

Instructional Segment	Guiding Questions	Phenomena	Performance Expectation	Suggested Topics/Activities	Resources
1. **What is Matter Made of?** ***continued***	What are the differences between solids, liquids, and gases?	Evaporate a salt solution and the result is salt crystals. Adding air to a balloon causes it to have shape and resistance. Adding air to expand a basketball, compressing air in a syringe	**5-PS1-1** **Develop a model to describe that matter is made of particles too small to be seen.**	• Compare the weight of substances before they are heated, cooled, or mixed vs. the weight of substances, including any new substances produced by a reaction, after they are heated, cooled, or mixed.	**FOSS Mixtures & Solutions** Investigation 5: Fizz Quiz (creating gasses)

Instructional Segment	Guiding Questions	Phenomena	Performance Expectation	Suggested Topics/Activities	Resources
1. **What is Matter Made of?** ***continued***	What are the differences between solids, liquids, and gases? *continued*		**3–5-ETS1-3** **Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.**	• What is a variable? • How can we isolate the variable that we want to test? • How to evaluate a design and make improvements or modifications	**FOSS Mixtures & Solutions** Investigation 2: Models (especially the Black Box activity)