Unit 1 Material Magic

Content Area: **Science**
Course(s): **Science 2**
Time Period: **MP1-2**
Length: **MP 1-2**
Status: **Published**

Essential Questions

- What are the different properties of matter?
- What are the differences between a solid, a liquid and a gas?
- How can a substance change?

Big Ideas

- Matter exists as different substances that have observable different proprieties.
- Different properties are suited to different purposes.
- Objects can be built up from smaller units.
- Heating and cooling substances cause changes that are sometimes reversible and sometimes not.

Cross Curricular Integration

Integration Area: Math

2.MD.D.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put together, take-apart, and compare problems using information presented in a bar graph.

Activity: Students will explore various objects from each state of matter and sort them accordingly. Students will then analyze the data and graph to match.

CSDT Technology Integration

8.1.2.DA.1: Collect and present data, including climate change data, in various visual formats.

8.1.2.DA.4: Make predictions based on data using charts or graphs.

Activity:

Mystery Science lesson Why Do We Wear Clothes? This is a lab. The students will complete a lab using the guided video process to explore the mystery.

Science and Engineering Practices

Asking Questions and Defining Problems:

- Ask questions based on observations to find more information about the natural and/or designed world(s).
- Ask and/or identify questions that can be answered by an investigation.

Planning and Carrying Out Investigations:

- With guidance, plan and conduct an investigation in collaboration with peers (for K).
- Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question.
- Make observations (firsthand or from media) and/or measurements of a proposed object or tool or solution to determine if it solves a problem or meets a goal.
- Make predictions based on prior experiences..

Analyzing and Interpreting Data:

- Record information (observations, thoughts, and ideas).
- Use and share pictures, drawings, and/or writings of observations.
- Use observations (firsthand or from media) to describe patterns and/or relationships in the natural and designed world(s) in order to answer scientific questions and solve problems.

Engaging in Argument from Evidence:

- Construct an argument with evidence to support a claim.

Science and Society

Susan Hendrickson

Paleontologist who has a Tyrannosaurus Rex named after her.

Enduring Understandings

Next Generation Standards

Structure and Properties of Matter

2-PS1.A Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. Matter can be described and classified by its observable properties.

2-PS1.A Different properties are suited to different purposes.

P-PS1.A A great variety of objects can be built up from a small set of pieces.

Chemical Reactions

2-PS1.B Heating or cooling a substance may cause changes that can be observed. Sometimes these changes are reversible, and sometimes they are not.

Student Learning Standards

Mathematics

MD.D.10. Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put- together, take-apart, and compare problems8 using information presented in a bar graph. Science examples: (1) Make a bar graph with a single- unit scale showing how many samples in a mineral collection are red, green, purple, or various other colors. Based on the graph, how many samples are represented in all? (2) As part of an investigation of which materials are best for different intended uses, make a picture graph with a single-unit scale showing how many tools in a toolbox are made of metal, wood, rubber/plastic, or a combination. Based on the graph, how many tools are represented in all?

Focus Areas

Knowledge

- Properties of matter such as strength, hardness, flexibility and texture.
- What materials are best suited for different purposes.
- An object built out of a small set of pieces can be deconstructed and built into a different object.
- Properties of solids, liquids, and gas.
- Some substances can experience reversible changes and some cannot.

Skills

- Determine different properties of objects.
- Group objects according to their properties.
- Construct an object out of a small set of pieces.
- Conduct experiments to change the state of liquids and solids.

Understandings

- Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

- Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.
- Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.

Climate Change

Technology: Cross-Curricular

8.1.2.DA.1: Collect and present data, including climate change data, in various visual formats.

- Activity: Mystery Science lesson Why Do We Wear Clothes? This is a lab. The students will complete a lab using the guided video process to explore the mystery.

Resources

Primary Resources

- Mystery Science

Supplemental Resources

Scott Foresman Science, Pearson, 2008

- Chapter 8, Properties of Matter

Leveled Reader

- Matter

Scientific Inquiry

Core

- Why do we wear clothes? Lab
- Can you really fry an egg on a hot sidewalk? Lab
- Why are so many toys made out of plastic? Lab
- Oobleck Activity

Supplemental

- BrainPop Jr. Video and Activity
- Scholastic Science Spin Magazines
- Discovery Education Videos
- Matter Interactive Notebook Pages
- States of Matter QR Codes