



Unit Plan: Matter and Energy

Liquids and Solids

Earth and Space Systems

Air and Water in the Environment

Big Ideas:

- Materials that exist as liquids and solids have specific properties
- Liquids and solids interact in different ways
- Some liquids and solids can be harmful to us and the environment
- Air and water are a major part of the environment.
- Changes to air and water affect living things and the environment
- Our actions affect the quality of air and water, and its ability to sustain life.

Overall Expectations

1. assess ways in which the uses of liquids and solids can have an impact on society and the environment;
 2. investigate the properties of and interactions among liquids and solids;
 3. demonstrate an understanding of the properties of liquids and solids.
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1. assess ways in which the actions of humans have an impact on the quality of air and water, and ways in which the quality of air and water has an impact on living things;
 2. investigate the characteristics of air and water and the visible/invisible effects of and changes to air and/or water in the environment;
 3. demonstrate an understanding of the ways in which air and water are used by living things to help them meet their basic needs.

Vocabulary: properties, matter, liquid, solid, gas, absorb, repel, dissolve, condensation, evaporation,

Lesson	– S M – modelled, teacher directed S = shared I – Independent: individual; student works with limited teacher intervention	Manipulatives, Resources, Literature
Lesson 1	<p>Introduction - What is Matter?</p> <p>Object: Introduce the concept of matter Identify matter as natural or man-made Introduce the big idea for this unit</p> <p>Resources: Smart Board collage of various types of matter T chart for each student (paper)</p> <p>- <u>Class discussion:</u> Students observe the pictures, and are introduced to the concept that everything around us is matter.</p> <p><u>Small group</u> – pair and share: Students are given a T chart. They are asked to sort the pictures into two categories of matter. They are to identify their sorting rule by giving a title to both categories.</p> <p><u>Whole group discussion:</u> students share their sorting rules. Students move pictures on the smart board to the appropriate categories.</p> <p>Big Idea: Our choices regarding how we use matter can be helpful and harmful to our environment. How can we make sure our actions are helpful?</p>	
Lesson 2	<p>The three states of matter and their properties</p> <p>Resources: recording sheets for each student Smart board presentation,</p> <p>Introduce the concept of properties: Describe the properties of common objects in the classroom.</p> <p>Science investigation: Each work centre has a sample of sand, rock, water or a liquid, and a snap cube. Students investigate each sample and record the properties of each.</p> <p>- <u>Class discussion:</u> Students share their findings, and categorize the samples into two groups according to the properties. Lead them to discover/conclude the two groups as liquids and solids.</p> <p>Smartboard presentation on the 3 states of matter – liquid, solids and gas and how the arrangement of their atoms or molecules differentiates each state.</p> <p>This lesson can be reinforced by Language Arts read alouds about matter, liquids, solids and gases.</p>	

Lesson 3	<p>- water and its 3 states</p> <p>Resources: recording sheets for each student</p> <ul style="list-style-type: none"> - experiments / observations of water, ice and water vapour - Science investigation/ exploration: recreate the water cycle (kettle, glass lid) <p>Language Arts Connection: various texts about water and the water cycle poem: Randy Raindrop Writing an Explanation</p> <ul style="list-style-type: none"> - <u>Class discussion:</u> the elements of explanatory writing. As a class, write an explanation of matter. (modeled and/or shared writing) <p><u>Student task:</u> Using kidspiration software, students write a short explanation of the water cycle, using pictures and text boxes.</p>
Lesson 4	<p>Mixing liquids and solids Soluble and insoluble</p> <p><u>Science Investigation:</u> : Each work centre has a sample of water, syrup, liquid and powder soap, corn starch, and other liquids and solids that can be mixed. Students investigate each sample and record the properties. They record the properties of the mixtures prepared.</p>
Lesson 5	<p>Absorbing and Repelling</p> <p>Experimenting, observing properties of various materials and their ability to absorb/repel water</p> <ul style="list-style-type: none"> - <u>Class discussion:</u> Identify materials/objects that we use in our daily activities that absorb and repel water. Discuss the properties and the original source of these materials/objects.
Lesson 6	<p>Buoyancy</p> <p>Experimenting, observing properties of various materials regarding sinking and floating on water.</p> <ul style="list-style-type: none"> - <u>Class discussion:</u> Identify materials/objects that we use in our daily activities that float and sink on water. Discuss the properties and the original source of these materials/objects.
Computer / Language Arts Connection	<p>Liquids and Solids in Our World</p> <ul style="list-style-type: none"> - Students create a pictorial, supported by text that demonstrates what they have learned about liquids and solids, their origins and how we use matter to create the materials and objects we use every day.
Math Connection	<p>Measurement: Temperature, Mass and Capacity</p> <ul style="list-style-type: none"> - learn to use a thermometer: vocabulary: degrees, Celsius, freezing point, boiling point - discuss how the temperature affects the water cycle (temperature determines whether the precipitation will be rain or snow) - Student investigations comparing the mass of various everyday objects and the capacity of containers.

Culminating Project	<p>Resources: Smart board information presentation:</p> <p>Big Idea: Our choices regarding how we use matter can be helpful and harmful to our environment. How can we make sure our actions are helpful?</p> <p>Students describe the properties of oil. They identify liquids and solids that we use daily that require oil or petroleum by-products. They learn about oil spills in the ocean. Each team of students uses their knowledge of the properties of oil to designs and creates a device that will help clean up an oil spill.</p>
Unit Review	<p><u>Interactive Smart board activity:</u></p> <p>Students place definitions under the appropriate categories on the Matter chart: (categories include: mass, liquids, solids, gas, evaporation, condensation)</p>