

Basic 5E lesson template with Concept/Language and Student columns

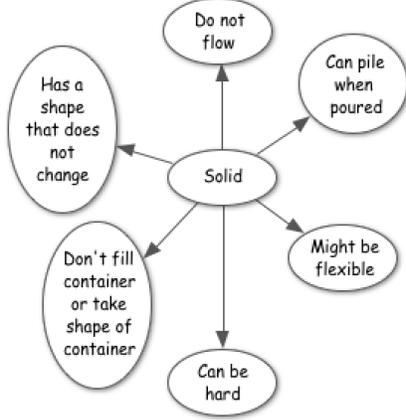
<p style="text-align: center;">Concept</p> <p style="text-align: center;"><i>Next Generation Science Standards,</i> PS1.A: The Structure of Matter (p. 16).</p>	<p style="text-align: center;">Teacher</p>	<p style="text-align: center;">Student</p>
<p><u>Engage</u></p> <p>Matter is the stuff around us and takes up space.</p>		<hr/> <p>Evaluate</p>
<p><u>Explore</u></p> <p>Matter can be found as a solid, a liquid or a gas.</p>		<hr/> <p>Evaluate</p>
<p><u>Explain</u></p> <p>Each state of matter can be <i>described</i> by unique characteristics.</p>		<hr/> <p>Evaluate</p>
<p><u>Elaborate</u></p> <p>The state of matter can be <i>identified</i> by its unique characteristics.</p>		<hr/> <p>Evaluate</p>

Completed 5E lesson with ELD integration (adapted from Full Option Science System, *Solids and Liquids* module).

Concept/ Language	Teacher	Student
<p><u>Engage</u></p> <p>Matter is the stuff around us and takes up space.</p> <p><i>Describe</i></p>	<p>Last week we talked about matter. What do you remember about matter?</p>	<p>It is the stuff all around us.</p> <p>It is anything you can put in a bag – even a really bag. I am made of matter.</p> <p>Evaluate: students recall what matter is from previous lessons.</p>
<p><u>Explore</u></p> <p>Matter can be found as a solid, a liquid or a gas.</p> <p><i>Compare and Contrast</i></p> <p><i>Classify</i></p> <p><i>Next Generations</i></p>	<p>Matter can be found in three common forms, or states.</p> <p>Matter can be found as a solid like this pencil. Can anyone think of another example of a solid? Turn to your partner and tell them another example of a solid.</p> <p>A _____ is a solid.</p> <p>Matter can be found as a liquid like water in a glass. Can anyone think of another example of a liquid? Turn to your partner</p>	<p>A desk is a solid.</p> <p>A rock is a solid.</p> <p>A fork is a solid.</p> <p>Milk is a liquid.</p> <p>Juice is a liquid.</p>

<p><i>Science Standards,</i> Science and Engineering Practice, Analyzing and Interpreting Data (p. 16) and Engaging in Arguments from Evidence (p. 16).</p>	<p>and tell them another example of a liquid.</p> <p>_____ is a liquid.</p> <p>Matter can be found as a gas like air. Can anyone think of another example of a gas?</p> <p>Turn to your partner and tell them another example of a gas.</p> <p>_____ is a gas.</p> <p>Today I have brought different examples of matter (have sets of solids, liquids and gases in zip-lock baggies such as colored water, corn syrup, rubbing alcohol, erasers, sand, paperclips, wire, cloth, air and partially filled balloons). Real examples of matter or photos to be posted in room with name identified</p> <p>Each group is going to get a set of bags containing several samples of matter. Your challenge is to try and sort the materials by state – put all the solids together, all the liquids together and all the gases together. If there are any samples that you are not sure of, put those in another pile.</p> <p>Solid, Liquid and Gas should be posted</p>	<p>Hair gel is a liquid.</p> <p>The stuff in a balloon is a gas.</p> <p>Students sort materials into groups representing each state. Students will probably have the sand or cloth in the uncertain pile.</p> <hr/> <p>Evaluate: Students sort samples into appropriate groups</p>
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	<p>clearly.</p> <p>Materials inside the bags should stay inside the bags. DO NOT OPEN THEM.</p> <p>Allow 10 minutes for students to sort samples</p>																													
<p><u>Explain</u></p> <p>Each state of matter can be <i>described</i> by unique characteristics.</p> <p><i>Compare and Contrast</i></p> <p><i>Classify</i></p> <p><i>Next Generations Science Standards, Science and Engineering Practice, Constructing Explanations and</i></p>	<p>On the board make a T-table with four columns</p> <table border="1" data-bbox="402 705 935 856"> <tr> <td>Solids</td> <td>Liquids</td> <td>Gases</td> <td>Unsure</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table> <p>Call on students to holdup one of the samples, name it and suggest a category in which it should be placed. If everyone agrees on the identification and placement, write the name of the material in the table. If there is disagreement, list the item in the “unsure” category.</p> <p>Ask students to defend why they sort each material into a category.</p> <p>Use a bubble graphic/map to clarify the properties of each state. As students describe a sample add the terms to the</p>	Solids	Liquids	Gases	Unsure					<p>Students record in their notebooks:</p> <table border="1" data-bbox="1013 634 1529 1003"> <thead> <tr> <th>Solids</th> <th>Liquids</th> <th>Gases</th> <th>Unsure</th> </tr> </thead> <tbody> <tr> <td>Eraser</td> <td>Water</td> <td>Air</td> <td>Sand</td> </tr> <tr> <td>Paperclip</td> <td>Syrup</td> <td></td> <td>Cloth</td> </tr> <tr> <td></td> <td>Rubbing</td> <td></td> <td></td> </tr> <tr> <td></td> <td>Alcohol</td> <td></td> <td></td> </tr> </tbody> </table> <p>Graphic organizer example. A similar one would be developed for liquids and gases.</p>	Solids	Liquids	Gases	Unsure	Eraser	Water	Air	Sand	Paperclip	Syrup		Cloth		Rubbing				Alcohol		
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<p>Designing Solutions (p. 16).</p>	<p>bubble map. If students do not know the correct term for a word like “flexible” or “pour” clarify for the class. Students should write down their own graphic organizer in their notebooks.</p> <p>For a solid confirm that solids have a definite shape – they don’t flow or take up the shape of their container.</p> <p>For a liquid, confirm that liquids flow, take up the shape of their container and has a flat, level surface.</p> <p>For a gas, confirm that gases have no definite shape and fill their containers.</p> <p>Review the materials in the unsure category.</p> <p>In your notebook, answer the following question</p> <p>What characteristics define the three states of matter (solid, liquid and gas)?</p>	 <p>Students correctly sort most of the samples and use the samples to develop definitions of each state:</p> <ul style="list-style-type: none"> • Solids hold their shape, may be flexible, pile when poured. • Liquids have no definite shape, they do not fill their container, pour but don’t pile. • Gases take up the entire space of the container. <p>Students write out their responses and then read them aloud to a peer.</p> <p>Students share and discuss their descriptions.</p> <p>A solid is hard. A solid has a shape.</p>
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Provide sentence frames for students to use.

A solid is _____.

A solid has _____ and _____.

A _____ is a solid _____ but _____ is not.

A liquid _____.

A liquid can _____ and _____.

A liquid can _____ but not _____.

_____ is a liquid.

_____ is a liquid _____ but _____ is not.

A gas _____.

A gas is _____ and _____.

A gas is _____ but not _____.

_____ is a gas.

Matter can be a _____, _____ or _____.

After students have had a chance to write their responses, tell them to read their descriptions about one state of matter to a peer. The peer will then read back their

A chocolate chip is a solid but water is not

A liquid pours. A liquid can change shape. A liquid can pour but does not fill the cup.

A gas is like the air.

A gas goes everywhere in the room.

Matter can be a solid, a liquid or a gas.

Evaluate: Students correctly sort and describe properties of solids, liquids and gases.

	description of another state.	
<p><u>Elaborate</u></p> <p>The state of matter can be <i>identified</i> by its unique characteristics.</p> <p><i>Classify and Justify</i></p>	<p>Using the definitions of solid, liquid and gas you just created, find an example of each state of matter in the classroom.</p>	<p>Students find more examples of solids (crayons, books, pencil cases), liquids (water, teacher's coffee) and gas (air in the room).</p> <hr/> <p>Evaluate: Students correctly identify examples of solids, liquids and gases in class.</p>