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| **Module**: States of Matter |
| **Module Summary**  This module will teach learners about four states of matter, the basic characteristics of each state, and how phase changes occur. |
| **Objectives** *(What do the students need to understand after completing this module?)*  Upon completion of this module, the learner will be able to:   1. Recall the basic characteristics of each of the four states of matter. 2. Explain how matter changes state. 3. Identify a state of matter given a picture/description. |
| **Assessments** *(Evidence of Learning)*  *(Will cover this in a later unit)* |
| **Learning Plan** *(How are we going to teach them? What learning activities will they do?)*  Content: Present slides with information concerning states of matter with pictorial representations of all the states of matter. (OBJs 1, 2, 3)  Practice Activity: Identify the States of Matter (OBJs 1, 3)  Practice Activity: See How Water Changes w/ Temperature (OBJ 2) |
| **Evaluation** *(How will we know if our learning/training module is successful?)*  *(Will cover this in a later unit)* |

# Storyboards

**Title Slide**

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| States of Matter  (Related image in background) | **Interactivity/Animation Notes**  None |
| **Audio**  This module will help you identify different states of matter and their properties. | **Other Notes**  None |

**Slide 2**

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| **Solid**   * Has a stable, definite shape, and a definite volume.   Image of Solid   * Solids can only change their shape by force, as when broken or cut. * Solids can be transformed into liquids by melting. | **Interactivity/Animation Notes**  Bullets to appear one-by-one in sync with audio. |
| **Audio**   * Solids have a stable, definite shape and volume. * Solids only change shape by force. * Solids transform to liquids by melting. | **Other Notes** |

**Slide 3**

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| **Liquid**   * Conforms to the shape of its container.   Image of Liquid   * Volume is definite if the temperature and pressure are constant. * When a solid is heated above its melting point, it becomes liquid. | **Interactivity/Animation Notes**  Bullets to appear one-by-one in sync with audio. |
| **Audio**   * Liquids take the shape of its container. * Volume is definite under certain conditions. * Solids may become liquid through melting. | **Other Notes** |

**Slide 4**

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| **Gas**   * A gas is a compressible fluid.   2 Images of Gas   * Not only will a gas conform to the shape of its container but it will also expand to fill the container. * A gas has no definite shape or volume, but occupies the entire container in which it is confined. * A liquid may be converted to a gas by heating at constant pressure to the boiling point, or else by reducing the pressure at constant temperature.Conforms to the shape of its container. | **Interactivity/Animation Notes**  Bullets to appear one-by-one in sync with audio. |
| **Audio**   * Gas is a compressed fluid. * Gas conforms and expands to fill its container. * Gas has no definite shape or volume. * Liquids may be converted to gas under certain conditions. | **Other Notes** |

**Slide 5**

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| **Plasma**   * Like a gas, plasma does not have definite shape or volume.   Image of Plasma   * Unlike gases, plasmas are electrically conductive, produce magnetic fields and electric currents, and respond strongly to electromagnetic forces. * Lightning, electric sparks, fluorescent lights, neon lights, plasma televisions, some types of flame and the stars are all examples of illuminated matter in the plasma state. | **Interactivity/Animation Notes**  Bullets to appear one-by-one in sync with audio. |
| **Audio**   * Plasma does not have a definite shape or volume. * Plasma has several unique properties that set it apart from a gas. * Listed here are examples of matter in the plasma state. | **Other Notes** |

**Slide 6**

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| **State Change Simulation**  **Activity Instructions:** Lorem ipsum, de tu ipsum  32 F  78 F  212 F  Image of Water (Changes with Buttons or On Hover Over Objects to Right) | **Interactivity/Animation Notes**  Simple simulation with the following parameters  Provide a picture of water at room temperature, and then provide the learner 3 buttons:   * + 1. one that says “Raise Temperature to 212F”,     2. one that says “Room Temp (78F)”, and     3. another that says “Lower Temperature to 32F”.   When the learner clicks on the raise temp button, the picture on the screen updates to a picture of boiling water/  When the learner clicks on the room temp button it restores to default room temp picture of water  When the learner clicks on freeze water the picture updates to display a picture of ice. |
| **Audio**   * None | **Other Notes**  Sample arrangement is most basic format. Client is ok with creativity on the layout of this interaction.  Need to include instructions for the exercise |

**Slide 7**

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| **Knowledge Check**  **Activity Instructions:** Lorem ipsum, de tu ipsum | **Interactivity/Animation Notes**  Using a drag and drop interaction, have the learners practice identifying the states of matter by completing a simple drag and drop interaction. Have 5-6 pictures of matter in various states (e.g. a picture of ice, cloud, lightning) and have the learner drag to the correct label (e.g. solid, liquid, gas, plasma). If the user drags a picture to the incorrect state, snap it back into position with some feedback provided. |
| **Audio**   * None | **Other Notes**  Sample arrangement is most basic format. Client is ok with creativity on the layout of this interaction.  Need to include instructions for the exercise |

**Slide 8**

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| **Review**   * There are four states of matter, each with different properties   Images of different states of matter   * + Solid   + Liquid   + Gas   + Plasma * Matter can change states under specific conditions | **Interactivity/Animation Notes**  None |
| **Audio**   * None | **Other Notes**  None |

# Navigation & Flow

Slides 2-7 should have “Next” and “Back” buttons such that the user can go forward and backward as they would like. The title page will only have a Next button. The End slide should have a “Back” button.

# Player Features

* Title your presentation States of Matter
* Include a menu
  + Each slide should have a title in the menu
* Do not include Resources, Notes, or Glossary
* Include play/pause, seekbar, and volume controls

# Project Assets

The client has given us creative license to use our own custom graphics if so desired. However, they have also provided us some stock photos we can use (see assignment description on Canvas). The client has provided all the text-based instructional content as well.

# Deployment

The client has requested this module be produced as a stand-alone HTML5 module for dissemination on their Website.