Unit/Lesson title:

- **DAY ONE – Changes of State**

Content area and grade level:

- Science/3rd Grade

Unit goal:

- Students will be able to summarize the three changes of state that water can go through. Students will be able to record observations of the changes of state water undergoes.

Lesson objective(s):

- Students will understand that water can be a solid, a liquid, or a gas. In the Science Journal, students will participate in writing activities that allow for exploration and observation of water changing state.

Florida Standards:

- SC.3.P.9.1 Describe the state changes that water undergoes when exposed to heating and cooling.

Assessment: (Pre and Post-Assessment and daily assessments must be included)

- Daily Assessment: Completion of exit slip.
- "An ice cube turns into water because it is ____. "
  - A. Heated up
  - B. Cooled down
- Students are watching an ice cube change state from solid to liquid and explaining what causes the change.

Motivating activity/anticipatory set/access prior knowledge:

- Have students work on **page 236** in **Be a Scientist Notebook** (Boiling Bubbles). The intent of this probe is to uncover students' basic ideas about water changing state into a gas. Allow students to work individually and then allow students to discuss in pairs or small groups. **(UDL 8.3 Fosters collaboration and community) *ESOL: Pair student with English speaker for translation. Use of Spanish Scientist Notebook is encouraged.** Teacher should monitor as students are discussing. Bring students together as a class to allow them to share their thinking. The purpose of this probe is to determine what misconceptions students are still holding onto. This information may be used to help determine what needs to be covered throughout this unit. **(UDL 3.1 Activate or supply background knowledge)**

Procedures:

- Go over Learning Goal and Standard.
- Review States of Matter (Solid, Liquid, and Gas) and discuss prior knowledge.
- Watch Ice Cube video demonstrating an ice cube changing state. **(UDL 1.1 Offer ways of customizing the display of information) (UDL 2.5 Illustrate through multiple media)**
- Share about observations that were made doing a Round Robin table discussion (Kagan). **(UDL 8.3)**

- Class discussion based on video. The purpose of this portion of the lesson is to engage students in open dialog about the topics they will be learning about, and to gauge the class knowledge of the topic.
- Talk about the three changes of state that water can go through (melting, freezing, boiling) and how they are similar to solid, liquid, and gas.
- Clarify that solid, liquid and gas are NOT changes of state. ****Gifted Enrichment**: Have Gifted students clarify the difference between Changes of State and States of Matter. Probe background knowledge. "How do you know that? Where did you see that before?"**
- Hold a reflection discussion. This should be done in a whole group setting allowing for the teacher to answer any appropriate questions students still may have after addressing the misconceptions. ***Ask specific questions to students. "What questions do you have about _____? What are you still wondering about ___? What did you learn when we talked about _____?"***
- Administer informal assessment (exit slip). Written in Science Notebook.

Closure:

- Exit Slip - Pose the question about ice changing into water.
  - "An ice cube turns into water because it is ____. "
    - A. Heated up
    - B. Cooled down

  Have students turn in to teacher.

Materials:

- Student Be a Scientist Notebook – page 236-237
- Teacher Edition – Pages 212a-225
- Ice Cube Video
- Interactive Science Journal
- Science Notebook (spiral)

Unit/Lesson title:

- **DAY TWO: Changes of State (Engage)**

Content area and grade level:

- Science/3rd Grade

Unit goal:

- Students will be able to summarize the three changes of state that water can go through. Students will be able to record observations of the changes of state water undergoes.

Lesson objective(s):

- Students will comprehend that water can be a solid, a liquid, or a gas. In the Science Journal, students will participate in writing activities that allow for exploration and observation of water changing state.

Florida Standards:

- SC.3.P.9.1 Describe the state changes that water undergoes when exposed to heating and cooling.

Assessment: (Pre and Post-Assessment and daily assessments must be included)

- Daily Assessment: Completion of exit slip.
- "When water is heated up it changes state. What state would the water be in after being heated up? "

  A.Solid
  B.Liquid
  C.Gas
- Students are virtually causing the water to change state and recording data about what causes the change. Hands on technology allows for students to fully engage.

Motivating activity/anticipatory set/access prior knowledge:

- Pose the question, "What are the states of matter we have learned about?" Have the students use prior knowledge about the states of matter try to answer the question. This is a quick review of what they have learned from the prior unit. **(UDL 3.1)**

Procedures:

- Review States of Matter (Solid, Liquid, and Gas) and discuss prior knowledge.
- Go over Learning Goal and Standard for new lesson.
- Have students take out their Science Notebook (spiral). Remind them that they will be recording data!
- Engage in Virtual Lab activity. This lab is used to engage with the phases of water virtually. The teacher will lead the activity.
- Explain that the water is heated, it changes from a solid to a liquid. Explain that it CAN be changed back to a solid (freezing) so this is a PHYSICAL CHANGE.
- After the lab, ask the students: What problem(s) are we solving with this investigation? What are some steps we followed to complete the investigation? How are you observing and collecting data? Students will be writing down observations

they made about the lab. **(UDL 3.3 Guide information processing, visualization and manipulation)**

- Hold a reflection discussion. This should be done in a whole group setting allowing for the teacher to answer any appropriate questions students still may have after addressing the misconceptions.
- ***Ask specific questions to students. "What questions do you have about ____? What are you still wondering about __? What did you learn when we talked about ____?"***
- Administer informal assessment (exit slip).

Closure:

- Exit Slip - Pose the question about what happens when heat is involved in changing state. Students are moving to corners of the room based on their answer. Corner A, B, or C.

  "When water is heated up it changes state. What state would the water be in after being heated up? "

  A.Solid
  B.Liquid
  C.Gas

Materials:

- SMARTBoard, Science Notebook (spiral), Link to the Virtual Lab: https://www.explorelearning.com/index.cfm?method=cResource.dspView&ResourceID=661

Unit/Lesson title:

- **DAY THREE - Melting and Freezing**

Content area and grade level:

- Science/3rd Grade

Unit goal:

- Students will be able to summarize the three changes of state that water can go through. Students will be able to record observations of the changes of state water undergoes.

Lesson objective(s):

- Students will be able to explain melting and freezing and what causes those changes.

Florida Standards:

- SC.3.P.9.1 Describe the state changes that water undergoes when exposed to heating and cooling.

Assessment: (Pre and Post-Assessment and daily assessments must be included)

- Daily Assessment: Completion of exit slip.
- "What happens to water during melting? What happens to water during freezing?"
- Students are responding to the writing prompt with scientific vocabulary taught throughout the lesson. Students are making connections.

Motivating activity/anticipatory set/access prior knowledge:

- Start the lesson with a question and answer session. "What are the three states of matter of water? What do all states of matter have in common? What differs in the three states of matter? What is the difference between water as a solid, a liquid and a gas?" Have the students do a Round Robin (Kagan) collaborative activity to share one thing they remember about the lesson from the previous day. **(UDL 8.3) (UDL 3.1)**

Procedures:

- Review States of Matter (Solid, Liquid, and Gas) and have each of 4 teams share what they know already.
- Go over Learning Goal and Standard for new lesson.
- Have students take out their Science Notebook (spiral). Remind them that they will be recording data!
- Play "Changing Water" video and pause for questioning. This video gives an overview of much of the information that will be covered in the unit. The key points to take from the video are that water can come in different states of matter and to provide visuals for each state. The focus of today's teaching will be on melting and freezing. **(UDL 1.1 Offer ways of customizing the display of information) (UDL 2.5) *ESOL: The video is provided in Spanish. Allow student to watch in English and then again in Spanish.**
- Refer back to Powerpoint.
- VOCABULARY:
    - Discuss **Melting**. Give the definition. Have students record it in their Science Notebook. **Melting** is a change from a solid to a liquid. Heat is added to the solid to cause the change. Students need to understand that melting is when

a solid turns into a liquid. Give an example of candle wax melting or ice cube melting. Some metals will melt as well. Have students **make connections** to an experience they've had with melting.

- Discuss **Freezing**. Give the definition. Have students record it in their Science Notebook. **Freezing** is a change from a liquid to a solid. Water freezes at 0°C or 32°F. **Heat energy** is removed from the liquid to cause the change. Water is cooled down. Students need to understand that freezing is when a liquid turns into a solid. Discuss how ice freezing is an example.
- Have students Compare/Contrast Freezing and Melting using a Venn Diagram. **(UDL 3.3)**

- Hold a reflection discussion. This should be done in a whole group setting allowing for the teacher to answer any appropriate questions students still may have after addressing the misconceptions. ***Ask specific questions to students. "What questions do you have about ____? What are you still wondering about __? What did you learn when we talked about ____?"***
- Administer informal assessment (exit slip). Written in Science Notebook.

Closure:

- Exit Slip - Pose the question about melting and freezing. Make sure student response is WELL WRITTEN with a detailed answer! (Heat is added or removed)
- "What happens to water during melting? What happens to water during freezing?"

Materials

- SMARTBoard, Science Notebook (spiral), Link to Changing Water video: https://ocps.instructuremedia.com/embed/62ba4cdd-1056-4972-9e02-d013611c7df4-3212

Unit/Lesson title:

- **DAY FOUR - Evaporation and Condensation**

Content area and grade level:

- Science/3rd Grade

Unit goal:

- Students will be able to summarize the three changes of state that water can go through. Students will be able to record observations of the changes of state water undergoes.

Lesson objective(s):

- Students will be able to explain evaporation and condensation and what causes those changes.

Florida Standards:

- SC.3.P.9.1 Describe the state changes that water undergoes when exposed to heating and cooling.

Assessment: (Pre and Post-Assessment and daily assessments must be included)

- Daily Assessment: Completion of exit slip.
- "What happens to water during evaporation? What happens to water during condensation?"
- Sample answers – "In evaporation a liquid turns into a gas because heat is added. In condensation a gas turns into a liquid when it is cooled." Students are responding to the writing prompt with scientific vocabulary taught throughout the lesson. Students are making connections.

Motivating activity/anticipatory set/access prior knowledge:

- Start the lesson with engagement video about evaporation. "What can you infer about the video?" Probe students about what they think is happening. **(UDL 3.1)**

Procedures:

- Review content about the previous day's lesson. "What do you remember about melting/freezing? How does that relate to the video we just watched?"
- Go over Learning Goal and Standard for new lesson.
- Hand each student the printed **close reading** passage about Evaporation and Condensation.
- This scenario is designed for students to **read and annotate using their close reading strategies**. The close read allows students to read about evaporation, boiling, and condensation before the teacher-led instruction. In this activity, students are going to independently read and use their close reading skills to annotate the passage. The teacher will then lead a whole group discussion summarizing key points, addressing vocabulary and dispelling any misconceptions. Students should paste the passage into their Interactive Science Journals. **(UDL 3.3)**
- VOCABULARY:
    - **Evaporation** is a change from a liquid to a gas.

    - Another name for gas is water vapor. *Water Vapor is NOT always visible! (Humidity is water vapor!)
    - Students need to understand that evaporation is when a liquid turns into a gas. Give an example of a puddle of water on the sidewalk that is there on the morning, but is gone in the afternoon. **It is key** that students understand when there is a change in heat energy that water can change states. Evaporation can take place at any temperature.
    - **Condensation** is a change from a gas to a liquid. Students need to understand that condensation is when a gas turns into a liquid. Have students think about water bottles that get droplets on them, or grass in the morning. A gas undergoes a change when it turns into a liquid.
    - ****Remind students that Condensation is a water cycle component. When the water in the air cools, condensation is happening and clouds are formed.****
- Hold a reflection discussion. This should be done in a whole group setting allowing for the teacher to answer any appropriate questions students still may have after addressing the misconceptions. ***Ask specific questions to students. "What questions do you have about ____? What are you still wondering about __? What did you learn when we talked about ____?"***
- Administer informal assessment (exit slip). Written in Science Notebook. Have students explain to their partner ONE thing that they learned from the lesson. Partner A shares Partner B's answer and vice versa to check for active listening.

Closure:

- Exit Slip - Pose the question about evaporation and condensation. Make sure student response is explained thoroughly by partner.
- "What happens to water during evaporation? What happens to water during condensation?"

Materials:

- SMARTBoard, Science Notebook (spiral), Close Reading Passage

Unit/Lesson title:

- **DAY FIVE - Freezing Temperature/Boiling Temperature**

Content area and grade level:

- Science/3rd Grade

Unit goal:

- Students will be able to summarize the three changes of state that water can go through. Students will be able to record observations of the changes of state water undergoes.

Lesson objective(s):

- Students will be able to describe the different changes water undergoes when exposed to heating and cooling.

Florida Standards:

- SC.3.P.9.1 Describe the state changes that water undergoes when exposed to heating and cooling.
- **SC.3.N.1.1** Raise questions about the natural world, investigate them individually and in teams through free exploration and systematic investigations, and generate appropriate explanations based on those explorations. (DOK 3)
-

Assessment: (Pre and Post-Assessment and daily assessments must be included)

- Daily Assessment: Completion of exit slip.
- Exit Slip - Have students fill in the chart on White Boards. Have students show responses!
- "Place the temperatures under their correct heading in the table."

Water freezes at...	**Water boils at...**

A. 0°C
B. 100°C
C. 32°F
D. 212°F
(Temperature at which water freezes: A and C; Temperature at which water boils: B and D)

Motivating activity/anticipatory set/access prior knowledge:

- Display this photo and ask for student inferences. Use the picture to have students think about add heating causes the water to change form. This picture is showing boiling, which ties into the probe that will be covered again in today's lesson. **(UDL 3.1) *ESOL: Visuals**

Procedures:

- Review evaporation and condensation from previous lesson. Clarify any misconceptions.
- Go over Learning Goal and Standard for new lesson.
- Have students turn to **page 236** in their **Be A Scientist Notebook**. Have them decide whether they would like to change or justify their responses from the first item they completed the probe at the beginning of the unit. Students have had an opportunity to learn about water changing states. Revisiting the probe will reveal whether students are still holding on to misconceptions or have gaps in conceptual understanding.
- Allow individual think time, and then allow a Turn and Talk collaborative discussion.
- **Question stems:** Why do you agree with _____? Explain your thinking. Has your thinking changed?
- Explain that boiling occurs at a specific temperature, and freezing occurs at a specific temperature. *Have students refer to their notes for the correct temperature at which something freezes. Remind students that this is when a liquid changes state to a solid. Introduce boiling. Probe students for what changes are being made. (Liquid to Gas) **(UDL 3.3)**
- VOCABULARY:
    - **Boiling:** When enough heat is added to water, it begins to boil. Water boils at 100°C or 212°F. Students can make connections to any experience they have with boiling.
    - Explain Fahrenheit and Celsius. Fahrenheit is more common in the United States, while Celsius is used in other countries. It is simply a different way of measuring temperature. *Reference Miles vs. Kilometers.

- Hold a reflection discussion. This should be done in a whole group setting allowing for the teacher to answer any appropriate questions students still may have after addressing the misconceptions. ***Ask specific questions to students. "What questions do you have about _____? What are you still wondering about ___? What did you learn when we talked about _____?"***
- Administer informal assessment (exit slip). Supply students with Whiteboards and markers.

Closure:

- Exit Slip - Have students fill in the chart on White Boards. Have students show responses!
- "Place the temperatures under their correct heading in the table."
- Draw the chart on the board. Have students copy the chart.
- Read off Answer Choices A, B, C, and D. Have students place them in the correct heading.

Water freezes at...	**Water boils at...**

A. 0°C
B. 100°C
C. 32°F
D. 212°F

(Temperature at which water freezes: A and C; Temperature at which water boils: B and D)

Materials:

- SMARTBoard
- Science Notebook (spiral)
- White Boards/Markers