

Science Instruction Observation Form

Educator Name: Mrs. Lyle

Supervisor Name: Dr. Ashton

Observation Date: 5/28/16

Observation Time/Duration: 6:43 min

Intended Observation Focus: Constructing Explanations, Analyzing and Interpreting Data

NGSS Practices *Which practices are observed?*

| <u>Investigation Practices</u> | <u>Sensemaking Practices</u> | <u>Critiquing Practices</u> |
|--|--|--|
| <input type="checkbox"/> 1. Asking Questions | <input type="checkbox"/> 2. Developing and Using Models | <input type="checkbox"/> 7. Engaging in Argument from Evidence |
| <input type="checkbox"/> 3. Planning and Carrying Out Investigations | <input checked="" type="checkbox"/> 4. Analyzing and Interpreting Data | <input type="checkbox"/> 8. Obtaining, Evaluating, and Communicating Information |
| <input type="checkbox"/> 5. Using Mathematics and Computational Thinking | <input checked="" type="checkbox"/> 6. Constructing Explanations | |

Observation Evidence *What are the educator and students saying and doing?*

- After students performed an investigation on the effect of the size of salt particles on ice, Mrs. Lyle pulls the class together and asks students to make sense of a phenomenon using their data as evidence.
- Mrs. Lyle asks students to share out their observations (data from the experiment) by posing the question: "What did you notice when the salt interacted with the ice?" Students' answers included: "...the smaller salt went into the ice and started melting"; "the ice cream salt was forming craters in the ice".
- Mrs. Lyle then transitions to asking students to explain the phenomenon of salt melting ice. She asks, "How did that change or add to your thinking about why?" and prompts students to think about the article they read before class. Students' answers included:
 - "The part that I read was talking about...that the salt slowed down the process of ice growing when it's cold". Teacher clarifies the student's idea by saying, "preventing the water from freezing".
 - Victoria says, "When I read it said that salt separates molecules..." She goes on to explain that water molecules are like "friends" and the salt is like a "mountain" that separates the water molecules "so that they can't turn into the ice".
- Mrs. Lyle builds off of Victoria's answer and asks: What makes up a water molecule? Students eventually agree that two hydrogen atoms and one oxygen atom make up a water molecule (H_2O). She then attempts to reaffirm Victoria's statement, "I hear Victoria saying that the two Hydrogen atoms are friends and then the salt causes them to separate."
- Mrs. Lyle gives students sentence starters ("I think this happened because...." and "Based on my reading and observations I can conclude...") to help them in constructing their explanations of the phenomenon in the experiment.

NGSS Practices Progression *Where do the observed practices fall along the progression?*

Practice #: 1 2 3 4 5 6 7 8
1-----2-----3-----4

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Rationale for Levels: *What impacted the ratings of the practices?*

Practice #4: Analyzing and Interpreting Data- Level 2

Mrs. Lyle provides opportunities for students to work with data (observations from their experiment). Students need more opportunities to recognize patterns in data (e.g., how does the amount of or type of salt affect ice melting) or relationships in the natural world (e.g., connect concepts from the experiment to the practice of using salt to melt ice on roadways).

Practice #6: Constructing Explanations- Level 2

Mrs. Lyle provides opportunities for students to create scientific explanations but students' explanations are mostly descriptive (e.g. "salt slowed down the process of ice growing when it's cold"). One student was able to explain why the phenomenon occurred by using evidence from the article (e.g. water molecules are like "friends" and the salt is like a "mountain" that separates the water molecules "so that they can't turn into the ice").