|  |
| --- |
| **NGSS Topic(s)/Standard(s) addressed:** |
| **Anchor Phenomena addressed:** |
| **Storyline / Science Content - Discipline Core Idea (e.g. PS1/LS2/ESS4)** |
| Brief description of the what students are working on: |
| **Scientific and Engineering Practices (SEPs) - circle # to all that apply** |
|  What teachers and students are observed doing:  |
|  **Investigative Practices** *1. Asking Questions/Defining problems** Teacher provides opportunities to ask questions.
* Student ask questions that are scientific.

 *2. Planning and Carrying out Investigations* * Teacher provides opportunities for students to design and conduct investigations.
* Students make decisions about experimental variables and methods.

 *3.Using mathematical and computational*  *thinking* * Teacher provides opportunities for students to make decisions about which mathematical skills to use.
* Students use mathematical thinking to solve scientific questions or problems.
 |  **Sense-making Practices** *4. Developing and Using Models* * Teacher provides opportunities for students to create or use representative models.
* Student models are focused on predicting or explaining a phenomenon.
* Students evaluate limits and merits of models.

 *5. Analyzing and Interpreting Data* * Teacher provides opportunities for students to make decisions about how to analyze and represent data.
* Students make sense of data by recognizing patterns or relationships.

 *6. Constructing Explanations* * Teacher provides opportunities for students to construct explanations on how or why phenomena occur.
* Students use appropriate evidence to support their explanations.
 |  **Critiquing Practices** *7. Engaging in Argument from Evidence* * Teacher provides opportunities for students to engage in student-driven argumentation.
* Students collaborate.
* Students use evidence in their discourse.
* Students critique competing arguments.
* Students build on and question each other’s ideas.

 *8. Obtaining evaluating and communicating*  *information* * Teacher provides opportunities for students to read and evaluate text to obtain scientific information.
* Students compare and combine information from multiple texts considering the strengths of the sources.
 |
|  **Evidence of Practices:** |
|  |
|  **Cross-Cutting Concepts (CCCs)** |
|  **Connections made by teachers in their questioning and prompting of students using Cross Cutting Concepts in their explanations.** |
| * **1.Patterns:** Observed patterns in nature guide organization and classification, prompt questions about relationships, and their underlying causes.
* **2.Cause and effect:** Events have causes, sometimes simple, sometimes multifaceted. Deciphering causal relationships, and the mechanisms by which they are mediated, is a major activity of science and engineering.
* **3.Scale, proportion and quantity:** In considering phenomena, it is critical to recognize what is relevant at different size, time, and energy scales, and to recognize proportional relationships between differing quantities as scales change.
 | * **4.Systems and systems models:** A system is an organized group of related objects or components; models can be used for understanding and predicting the behavior of systems.
* **5.Energy and matter: Flow, cycles and conservation:** Tracking energy and matter flows, into, out of, and within systems helps one understand their system’s behavior.
* **6.Structure and function:** The way an object is shaped or structured determines many of its properties and functions.
* **7.Stability and change:** For both designed and natural systems, conditions that affect stability and factors that control rates of change are critical elements to consider and understand.
 |
|  **Evidence of how Cross-Cutting Concept(s) are being used in the lesson:** |
|  |

|  |
| --- |
| **Instruction/Pedagogy Using the 5E Methodology** |
|  **5E Instructional Model (check all)** | **Instructional Format (check all)** |  **Depth of Knowledge (DoK)** |
| * *Engagement* - students' prior knowledge accessed and interest engaged in the phenomenon
* *Exploration* - students participate in an activity that facilitates conceptual change
* *Explanation* - students generate an explanation of the phenomenon
* *Elaboration* - students' understanding of the phenomenon challenged and deepened through new experiences
* *Evaluation* - students assess their understanding of the phenomenon
 | * Whole Group
* Small Group
* Partners
* Individual
* Stations
* Teacher/Para/Interventionist

providing direct instruction to a whole group/small group/individual student(s) | * DOK 1 Recall
* DOK 2 Skill/concept practice
* DOK 3 Strategic Thinking

(Reason, Plan, Critique)* DOK 4 Extended Thinking

 (Design, Create, Transfer) |
| Notes/Comments/Evidence: |
| **Meeting the Needs of All Learners** |
| **Checks for Understanding** | **Actionable Feedback Provided** |  **Scientific Discourse** |
| * Teacher monitors the understanding of all students throughout the lesson
* Teacher monitors the understanding of most students throughout the lesson
* Teacher monitors the understanding of some students throughout the lesson
* Not observed
 | * Teacher provides timely feedback to most students throughout the lesson
* Teacher provides timely feedback to some students throughout the lesson
* Students have opportunity to provide feedback to each other
* No teacher/student feedback observed
 | * Mostly teacher talk
* Teacher call – students respond
* Teacher and student dialogue
* Mostly student talk
* Independent work – no

student discourse |
| Notes/Comments/Evidence: |
| **Environmental Evidence** |
| **Supporting Learning (check all that apply)** |
| * Driving Question identified / observed
 | * Science notebooks evident
* Respectful and positive interactions
* Timely transitions
* Routines
* Science reference materials evident
* Lab Safety Protocols followed
* MSDS Sheets available/evident
 | * Rows
* Circular arrangement
* Pairs
* Groups
* Clusters
* Other: (note)
 |
| * Storyline(s) identified / observed
 |
| * Consensus (models) charts evident
 |
| * Hands-on science materials evident
* Positive expectations posted
* Student work displayed
 |