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| **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:** | | | |
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| **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:** | | | |
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| **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 |