**Date: School: Grade Level:**

**Unit: Lesson Number/s: Concepts:**

**Rationale for this lesson study:**

**STEM Professional:**

**Lesson refinements to observe selected student learning traits:**

1. All students engage intellectually in important science and engineering content.
2. All students participate in science discourse with peers (equitable, accountable talk).
3. All students use evidence to demonstrate conceptual understanding.

**Teaching for Conceptual Change**

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| --- | --- | --- |
| MonTuesWed | **1**  Elicit each student’s initial ideas. | **Conceptual Story** |
| **2**  Prompt possible dissatisfaction with old ideas, and surface the range of students’ new ideas that make sense with their new observations. |
| Thurs | **3** Narrow the range down to the one new idea that is most plausible in this situation. |
| **4** Reflect back to initial ideas and how each student’s understanding has changed. |
| FriMonTues | **5** Apply the new idea to test how it holds up in new situations.Engineering Enhancement |

***Standards:***

**Performance Expectations -**

|  |  |  |
| --- | --- | --- |
| **Science and Engineering Practices** | **Disciplinary Core Ideas** | **Crosscutting Concepts** |
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| **Apply the new idea to test how it holds up in new situations.****Engineering Enhancement** |
| **Engineering Problem:****Concepts:**What concepts will the students need to know before the activity:What concepts are the students expected to learn through the activity:**Learning Target:** |
| **What aspect(s) of ED will students attend to?** * Define the problem or challenge (APPD)
* Define Constraints (APPD)
* Define Criteria for Success (APPD)
* Develop Solutions (APPE)
* Test and Optimize Solutions (APPF)
 |
| **Criteria and Constraints:** *Will students define or teacher?* |
| Criteria | Constraints |
| **Detailed Lesson Progression: With prompts and possible student responses***What will the students be doing? Teacher?*1.2.3. |
| **Assessment:***What is being assessed? How is it being assessed?* |
| **Reflection notes - things to consider when teaching the lesson:***How did your students engage in the lesson?**What did the student work and performance in the assessment show about student learning?**What tips would you offer to other teachers?* |

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| **Considerations** |
| * Supporting all learners – modifications for English Learners, Special Education, Advanced Learners:
 |
| * Suggested Unit Adjustments – “Ripple Effects”
	+ *Consider: How does the timeline and content of the rest of the unit need to be adjusted to fit this enhancement? What other lessons need to be dropped or enhanced? Are there specific adjustments to other lessons?*
 |
| * Integration (optional)
	+ *Consider: How does this lesson connect with other content areas, including CCSS, Math, ELA and 21st Century Skills.*
	+ *Real World Connections (How does it connect with social, family, and community happenings?)*
 |

**Generalizations to Practice**

TITLE Date PLC team

**Student Learning Expected**

**Instruction Details**

**NGSS Links**

**Research Links**How People Learn      Cognitive Demand

**Samples of student work**

**Insert supporting resources here (pictures, student sheet, rubrics, copy masters, etc.):**