#### **Lesson Opener**

* **Lesson Title**: (can be taken from TOC)  
  [Insert Lesson Title]
* **Essential Questions**:  
  [Include thought-provoking, open-ended questions to drive the lesson's inquiry.]
* **Big Idea of the Lesson**: (can be taken from excel sheet)  
  [Explain the central theme or takeaway of the lesson.]
* **Extension of Chapter’s Phenomenon**: (4-5 lines)  
  [Relate the phenomenon from the chapter to the specific lesson’s content.]
* **Vocabulary:**
  + [List and definitions]
* **Main lesson content-**
* **Engage:**
  + Start with an engaging, phenomenon-related question or interactive activity (9-10 lines) to capture students' interest. This could be picture-based or a thought-provoking question that activates prior knowledge and sparks curiosity.
  + Include a task involving AI in this section of lesson to encourage students to ask questions about the topic and deepen their exploration.
* **Direct Instruction (Pre-Explore Section)**
  + Provide background information and content needed for students to understand the upcoming Explore section. Reference the phenomenon frequently to strengthen the storyline. Include interactive elements such as answering a question/s from Progress Check, taking notes of observations, discussion with peer.
* **Explore:**
  + Provide a quick lab that will be completed in 15-20 mins. It should be related to the current lesson.
* **Explain:**

**Content to be included-**

* **Calorimetry**
* **Calorimeter**
* **Calculate and interpret heat and related properties using typical calorimetry data**
* **Heat capacity and specific heat capacity**
* **Heat of a reaction**
* **Conduction and convection**
  + Provide a detailed explanation of the lesson’s core concepts in connection to the lesson’s learning objectives, ensuring an interactive approach with questions related to students' daily lives and their answers. Each subtopic should be explained in 10-12 lines, supported by suggestions for visuals, diagrams, or multimedia elements, with tables included wherever applicable. Ensure the explanations directly tie into the exploration activity wherever applicable.
  + For every main concept explained, one sample solved problem is introduced where applicable and then one question for students to solve as a Progress Check. Write up to three scaffolded questions that measure students’ understanding of the concepts explained in the Lightbulb section. Ensure the questions vary in difficulty (DOK levels 2, and 3) and reinforce key points from the lesson.
* **Elaborate:**
  + Design an extended activity or discussion that challenges students to apply their knowledge in new contexts or explore related topics based on the unit phenomenon. This unit-level phenomenon will be divided into Chapter STEM Tasks, which are further broken down into relevant lessons. Each Chapter STEM Task will appear in the Elaborate section of the lesson when applicable. The extended activity might include a small project, a research assignment, or a class debate. Incorporate critical and creative thinking questions or mini-tasks that encourage students to connect the lesson content with the Chapter Phenomenon and STEM Task. The Questioneer can be used to prompt students to ask key questions that expand their understanding and deepen their engagement with the material.
* **Evaluate:**
* Develop a lesson quiz with 8 questions that vary in difficulty (DOK levels 2, 3). The quiz should cover all main concepts from the lesson and align with the lesson’s objectives.
* Develop 2-3 ACT questions (MCQs related to one common paragraph)
* **Extend:**
* Create activities or mini-tasks or questions (including readings) that challenge students to apply what they’ve learned to real-world situations or problems, deepening their understanding of chapter and unit tasks. Set the stage for future lessons by integrating spaced practice opportunities, where students review and reinforce key concepts over time. Spaced practice should be structured to revisit material across multiple sessions, improving long-term retention and mastery.