PUSD Lesson Plan Template

Teacher Name: Taelyr Anderson **Date**: 11/3/2025

Standard(s): 8.P4U1.3: Construct an explanation on how energy can be transferred from one energy store to another. **8.P4U2.5:** Develop a solution to increase efficiency when transferring energy from one source to another.

Learning Objective: Students will **observe, investigate, and explain** how energy transfers between objects, identify where energy is lost as heat or sound, and propose ways to improve energy transfer efficiency within a simple system.

Lesson Plan:

Task Analysis/Activity Sequence **Considerations for each sub-objective:** Content Information/Modeling/Guided Practice *(include vocabulary, questioning, opportunities to collaborate and explain thinking)*

Sub-objective:
 	
Engage with a real-world phenomenon to observe how energy moves through a system.
 	
<u>Content Information / Modeling / Guided Practice:</u>
 	
• Show a short clip of a "Rube Goldberg machine" completing a task (pouring cereal or popping a balloon).
• Demonstrate a ball drop **-** students observe how it doesn't bounce to the same height.
• Lead discussion using key questions:
  ○ *Where did the energy start?*
  ○ *Where did it go?*
  ○ *Was energy lost or changed?*
• Introduce vocabulary: energy transfer, transformation, efficiency.

Aligned Activity *(all students engaged and check understanding)***:** Students record their thoughts on the Energy Phenomenon Observation Sheet and post sticky notes to a class "Energy Wall." *Teacher checks for misconceptions through student discussion.*
Sub-objective: *Investigate how changes in system variables affect energy transfer efficiency.* <u>Content Information / Modeling / Guided Practice:</u> • Explain efficiency = (useful energy output ÷ total energy input) × 100%. • Model setup for the **Marble Energy Transfer Challenge**. • Review how to safely collect and record data.

Aligned Activity *(all students engaged and check understanding)***:**

Students work in small groups to roll a marble down a ramp to move a cup. They:

- Test different variables (ramp height, surface type, or cup mass).
- Record data in the **Marble Energy Transfer Challenge Data Sheet**.
- Identify and discuss where energy is lost (heat, sound, friction).

Teacher circulates, questions, and checks for understanding using academic vocabulary.

Sub-objective:

Develop and communicate a solution to improve efficiency in energy transfer.

Content Information / Modeling / Guided Practice:

- Guide students to analyze data for efficiency patterns.
- Discuss real-world examples of improving energy systems (cars, light bulbs).
- Model how to draw conclusions supported by evidence.

Aligned Activity *(all students engaged and check understanding)***:**

Students redesign or modify their setup to increase efficiency (reduce friction, smooth surfaces, adjust ramp height).

They explain their reasoning using key terms and share designs with peers for feedback.

Aligned Practice:
(Independent practice, small group work, Tier 2 intervention, etc…)

Students complete the "Energy Efficiency Exit Ticket"**,** explaining how energy was transferred in their system and suggesting one way to make it more efficient.

Teacher collects for formative assessment and evaluates understanding of energy transfer, transformation, and efficiency.

Lesson Closure:
(Circle back to learning objective, ticket out the door, recap of key lesson points, summary of information, preview of next lesson, reminders, etc…)

- Review key question: *"Where does the energy go?"*
- Summarize class findings about efficiency and energy loss.
- Connect to the next lesson on "Energy Conservation in Systems"**.**
- Exit ticket collected as evidence of mastery.