Energy: Lesson 17

Essential Question: How do windmills change wind to light?

Phenomenon Question: How can we apply our knowledge of energy to solve a problem?

Objective: Apply the engineering design process to construct and refine a device that transforms energy.	**Materials:** Pencil	**Projected Slides:** 172–179

Share the following items with families in advance of the lesson.

- Links: Lesson 17 Daily Video, Science Journal Lesson 17
- Materials list
- Assignment: After watching the video, students respond to this prompt: How did William use the engineering design process to solve a problem?

Remote Learning Recommendations

Type		Pacing	Activity	Notes
Hybrid (in-class synchronous and remote asynchronous)	Asynchronous (in Sync)	10–15 minutes	Daily Video	Video description: Students review the engineering design process and identify a problem to solve in an engineering challenge.
		10 minutes	Assignment	The video asks students to respond to this prompt: How did William use the engineering design process to solve a problem?
		15 minutes	Virtual Class Meeting (Optional): Science Discourse	Ideally this meeting occurs after students watch the video and complete the assignment: • *Discuss How William Used the Engineering Design Process Remote Alternative* Facilitate a discussion about the Science Journal task. Use student responses while discussing William's design process to ensure that students understand the steps and nature of the process. Look for evidence that students understand how William used a process similar to the one shown in the engineering design process chart to solve his problem. While discussing students' responses, emphasize the importance of planning, persistence, and teamwork. Encourage students to use those approaches in their own engineering challenge during the next lesson. Discuss the scenario the video presents. The area students live in has flooded and the power has gone out. Brainstorm ideas for something students can design to bring light to their homes and keep their families safe. Remind them that in the first, Ask, stage of the engineering design process, engineers identify criteria and constraints of the design problem. Note: The Daily Video and Science Journal do not refer specifically to mechanical energy. To ensure that students have an understanding

				of mechanical energy, follow the guidance of the Teacher Edition and TEKS 5.6A.
	Synchronous	2 minutes	Launch	Refer to Teacher Edition to conduct the lesson Launch (Projected slides 172–173). Give all students a chance to participate either in-person or virtually.
	Synchronous	28 minutes	Learn	Refer to Teacher Edition to conduct the lesson Learn (Projected slides 174–176). • Review the Engineering Design Process • Discuss How William Used the Engineering Design Process Give all students a chance to participate either in-person or virtually.
	Synchronous	5 minutes	Land	Refer to Teacher Edition to conduct the lesson Land (Projected slides 177–179). • Facilitate a discussion about how William used the engineering design process to solve a problem. Ask students to describe the problem that students' engineering design must solve. Give all students a chance to participate either in-person or virtually.

Asynchronous	Synchronous	Hybrid
Remote students using in Sync with optional virtual class meeting	Some students in-class and some remote but all participating live	In-class students are synchronous and remote students asynchronous