Weather and Climate: Lessons 22–25

Essential Question: How can we prevent a storm from becoming a disaster?

Phenomenon Question: How can people design better solutions to reduce the impact of weather hazards?

Objective: Apply the engineering design process to design a structure that reduces the impact of flooding caused by storm surge.	**Materials:** Pencil	**Projected Slides:** 236–245

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

- Links: Lessons 22–25 Daily Video, Science Journal Lessons 22–25
- Materials list
- Assignment: After watching the video, students complete the Ask, Imagine, and Plan stages of the engineering design process.

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 use the engineering design process, with established criteria and constraints, to design a seawall to reduce the impact of flooding caused by storm surge.
		10 minutes	Assignment	The video asks students to engage in the Ask, Imagine, and Plan stages of the engineering design process.
		15 minutes	Virtual Class Meeting (Optional): Science Discourse	Ideally this meeting occurs after students watch the video and complete the assignment: • Introduce Key Term: **seawall** • Facilitate a discussion about the Science Journal task. Use student ideas to create a class criteria and constraints chart. Send chart to all students.
	Synchronous	3 minutes	Launch	Refer to Teacher Edition to conduct lesson Launch (Projected slides 236–237). Give all students a chance to participate either in-person or virtually.
		25 minutes	Learn	Refer to Teacher Edition to conduct lesson Learn (Projected slides 238–244). • Ask about an Engineering Problem Introduce Key Term: **seawall** • Imagine a Design Solution • Plan a Design Solution Give all students a chance to participate either in-person or virtually.

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	5 minutes	Land	Refer to Teacher Edition to conduct lesson Land (Projected slide 245). • Review the engineering design process. Give all students a chance to participate either in-person or virtually.
Additional Instruction		Extension (Optional)	Allow students to work in groups to plan, create, improve, and share a group design plan by using their individual plans.
		Differentiation (Optional)	Students may generate ideas for unrealistic solutions. Encourage students to consider practical designs. Use questions such as these to guide them toward realistic solutions: Are these materials available? Could we build this? How would that work?

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

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