

Unit 3: Connecting Places, Connecting People

WEEK 8 Lesson 1

Science and Engineering: Engineering Design

Designing the Our Town Project Exhibit: Creating Displays

Big Idea	We understand our own identities by thinking about where we are and where we come from.
Guiding Question	How can we help others understand the identity of our place?
Content Objective	I can use the engineering design process to create an exhibit to display artifacts and figure out ways to improve the design. (2-PS1-2, Practice 4, Practice 6)
Language Objectives	I can use adjectives to describe elements of our design and execution. (L.6.2.a) I can share ideas with my classmates by asking and answering questions. (SL.2.2.b)
Vocabulary	adjective: a word or phrase used to describe a person, place, thing, or idea create: to make something improve: to make something better modify: to make a change to something to get a different result
Materials and Preparation	<ul style="list-style-type: none">● all materials identified in the groups' Design Diagram and Materials sheets Arrange these materials in a central location so that children can access them as needed.● Engineering Design Process chart, from Week 6● Engineering Design Process cards, Create and Improve● glue stick, for attaching card to chart● each group's Design Diagram and Materials sheet, from Week 7, Lesson 2● Roles cards, from previous lessons● writing tools● Our Town Project Planning chart, for reference● Museum Exhibits images, from Week 6, for reference

On the whiteboard, write the following questions.

What works?

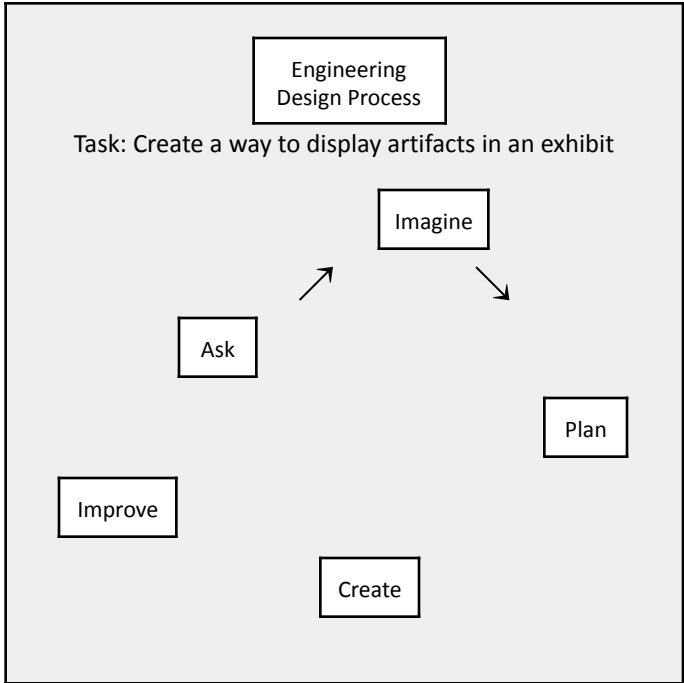
What doesn't?

What could make it work better?

Opening
5 minutes

You have worked in design teams to come up with final diagrams for displaying artifacts. Today we'll add the final two steps to the Engineering Design Process: Create and Improve. [Some groups may need to complete their diagrams or materials lists before moving on.]

Attach the Create and Improve cards to the chart, as follows. Draw arrows from Plan, to Create, to Improve.



Today, as a group, you'll refer to your final diagram and create the actual display you have designed. You may find that once you create something, you'll run into a problem to resolve. That's the "Improve" step. You might find yourselves moving back and forth between creating and improving a few times. That's what engineers do!

The questions on the board will help you think about how your design process is going: What works? What doesn't? What could

	<p><i>work better? When you need to, modify something, or change it, and then test it again.</i></p> <p><i>I used your materials lists to gather the materials you thought you would need.</i></p> <p>Indicate where the materials are set up. If substitutions have been necessary, let children know that and explain why, describing properties of requested materials and what might be similar to or different from those provided.</p> <p>Distribute Role Cards, and indicate where each group will work. Distribute the completed Design Diagram and Materials sheets.</p> <p><i>We'll be creating displays today and during Studios. Materials Managers, you will come gather the materials on your lists; when you bring the materials back to your group, make sure everyone in the group agrees that they are the ones you want to try.</i></p> <p><i>As you know, it can be challenging to work in a group, especially when you are trying to create something together. Continue to ask each other questions about each other's ideas. As you are working, make sure to talk about what you notice is working (or not) and why you think it's going that way. Use adjectives to describe properties of the materials you chose. For example, you might have chosen a material that is very stiff, too flexible, or not strong enough. Doing this will help you make good decisions about what to keep and what to improve.</i></p>
<p>Investigation 20 minutes</p>	<p>Teams will work at different paces. Circulate to observe children working, listen to their conversations, and offer support as needed without offering solutions to the challenges children will run into as they work with materials. Refer children back to the kind of artifact for which they are designing a display to make sure their designs make sense and will be effective.</p> <p>If children run into structural difficulties (such as instability, too much flexibility, insufficient weight-bearing capacity), encourage them to reflect on exactly where the problem might be and to try different solutions, moving dynamically between the Create and Improve steps.</p>
<p>Closing 5 minutes</p>	<p>Signal clean-up time and bring the group back together. Share some observations of the work in progress. If one group is particularly stuck or successful, have them ask questions of each other and share strategies. Offer information about when and how children might continue their work, such as during Studios.</p>

<p>Standards and Practices</p>	<p>L.6.2.a Use words and phrases acquired through conversations, reading, and being read to, and responding to texts, including using adjectives and adverbs to describe (e.g., When other kids are happy, that makes me happy).</p> <p>SL.2.2.b Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.</p> <p>2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.</p>
<p>Ongoing assessment</p>	<p>Are children’s designs appropriate for the artifacts to be displayed? Do children consider properties of materials to assess design success?</p> <p>Observe and take notes about small group work. Are children working collaboratively? What kinds of difficulties are children running into? How are they addressing them? What makes a group successful?</p>

Notes