WEEK 8 Lesson 1

Science and Engineering: Matter and its Interactions

Designing and Building Alternative Seating

Big Ideas	Materials have observable properties. Materials' properties impact how they are used for specific purposes.
Guiding Questions	What are the properties of a seat that will meet our needs as learners? What materials could the seat be made of to respond to our needs?
Content Objectives	I can identify and analyze the materials used in alternative seatings other designers designed. (2-PS1-1, 2.K-2-ETS1-3) I can find inspiration and compare different ways to design alternative seating. (Practice 6, 2-PS1-1, 2.K-2-ETS1-3)
Language Objective	I can identify and discuss the materials used in the design of alternative seatings, the properties of those materials, and how they meet specific criteria. (SL.4.2)
Vocabulary	**alternative seating**: places that allow people to choose how they sit according to their needs
Materials and Preparation	• Alternative Seating packets, one for each group of 4 children • Alternative Seating slides, with appropriate technology, optional • Science and Engineering packets • writing and drawing tools Create small groups of four children, putting two working pairs together for each group.
Opening 5 minutes	*Often when engineers are designing something, they look at what other engineers have done. This helps them think through their own design ideas in new ways.* *Today we'll look at some kinds of seating other people have designed. We'll pay attention to what materials these seats are made of and how the seats meet learners' needs. Then you'll return*

	to your own designs with these ideas in mind. As you are looking at these different kinds of seating, think of how they may inspire your own designs. *You will work with your partner and another pair of children. First, look through all the designs. Talk about what you notice and wonder about the different kinds of seats. There might be one that meets some of the criteria you have set for your own designs. Then agree on one seat design to analyze—look at and think about carefully.* Distribute Alternative Seating packets, Science and Engineering packets, and writing tools, and send children to work in small groups.
Investigation 15 minutes	As children work together, circulate to encourage them to look very carefully and talk about the materials, properties of materials, and criteria. *What need might a particular kind of seat meet?* *Would that be a good seat for our classroom?* *What problems might this type of seating solve?* *How could you use this design to improve your own seat?* Support children's conversations and efforts to record their ideas on the page.
Discussion/ Closing 5 minutes	Gather children back in the whole group, and facilitate a short discussion. *What did you learn from looking at these designs that might help you in your own design?*
Standards	**SL.4.2** Produce complete sentences when appropriate to the task and situation in order to provide requested detail or clarification. **2-PS1-1.** Describe and classify different kinds of materials by observable properties of color, flexibility, hardness, texture, and absorbency. **2.K-2-ETS1-3.** Analyze data from tests of two objects designed to solve the same design problem to compare the strengths and weaknesses of how each object performs. **Practice 1.** Asking questions and defining problems
Ongoing assessment	Observe how children are integrating learning from throughout the unit. Do they connect properties of materials to the use of specific materials in specific designs? How do they use new vocabulary? What conclusions do they draw, and how do they apply these to their own designs?