



T A L E N T
M A K E R C I T Y

THE BUS PROJECT

TODAY'S EXPLORATION: Making a Window Shade

Grade Level : K

Overview: The sun is out at different times throughout the year. To sleep and remain comfortable, it is essential to create shade when needed. Students will explore what materials could generate shade in the converted bus.

NGSS: K-PS3-2. Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.

Practices

- Constructing Explanations and Designing Solutions

Crosscutting Concepts

- Cause and Effect

Materials:

- A variety of fabrics collected (ex. Towels, sheets, blankets, donated fabric, etc. Make sure some are more sheer than others)
- Tape
- Thermometers or black construction paper

Investigation:

1. Share with students that based on the need survey, you thought it would be interesting to find out if there is a "best" material with which to make curtains for the bus. The purpose would be to have curtains to keep the inside of the bus darker and cooler when it is sunny.
2. Gather a variety of fabrics and materials to test blocking light with.
3. Small groups can do this next part.
4. Have each group choose a fabric and create a mini shade to block the sunlight.
5. (With thermometers) Have each group put the thermometer in the shade created by their fabric, and the teacher will then put a thermometer in the direct sunlight.
6. After 10 minutes, check the temperature for each fabric or group and record it on the [Class Window Share Data Recorder](#). This should all be collected on one data collector for

the whole class to view, with the teacher's assistance.

7. (Without thermometers) Compared to the control, this can be done by touching the black paper and deciding if it is hot, warm, lukewarm, cool, or cold.
8. Take pictures of the students' investigations.
9. Gather the information and compile it in a way that can be visible to students.
10. Have a class discussion about which fabrics worked best.
11. The teacher can then write a cooperative email to the Bus Project about what they learned and attach their pictures to the email.

Product or Artifact Possibilities:

- Mini model of a window shade
- Pictures of student investigations
- Completed [Class Window Share Data Recorder](#)
- Cooperative email (with teacher assistance) sharing the student findings with the Bus Project

Guiding Questions:

1. What materials work best at creating shade?
2. Which materials keep it the coolest when it is sunny?

What Are We Discovering?

Students learn that different materials are more effective at creating shade and that shade can keep things cooler than direct sunlight. The students are also learning how to set up an investigation by creating a mini model of a window shade. They can then compare the materials that worked well and those that worked less well.

Acknowledgments:

Many thanks to Tiffany M. Windle-Hanson and STEM Oregon.

- A thermometer can be used to identify specific quantitative temperature

Or

- Temperature can be checked qualitatively using hot, warm, luke warm, cool, and/or cold, by touching the black paper.

Group Number and Chosen Materials	Hot (and/or temperature)	Warm (and/or temperature)	Luke Warm (and/or temperature)	Cool (and/or temperature)	Cold (and/or temperature)
Control/ Example - Black paper in direct sunlight	<p style="text-align: center;">×</p> <p style="text-align: center;">67 ° F</p> <p style="text-align: center;">Change this to match your investigation</p>				
Group 1/					
Group 2/					
Group 3/					
Group 4/					
Group 5/					
Group 6/					