

Visible Elements in Photo



- Multiple freshly cut tree logs/sections stacked together, varying in diameter
- Exposed wood grain and growth rings visible on each cross-section
- Dark heartwood (inner core) and lighter sapwood (outer ring) clearly visible
- Bark remaining on the edges of some logs
- Logs arranged in a natural, compact storage pile

Reasonable Inferences

- From growth rings and log diameters: Trees of different ages were harvested; older/larger trees have more rings and thicker sections (indicates time and growth).
- From bark presence on some logs: Logs have recently been cut and not yet processed or dried extensively.
- From stacked arrangement: These logs need to be organized, transported, or stored efficiently; stacking by size or type would improve stability and access.

Engineering Task

K-2 Challenge:

Make a strong log tower! Use small sticks or dowels to build the tallest, wobble-free stack you can. You can arrange them however you think works best. Can your tower stand up when someone gently shakes the table? Try different ways of stacking until it feels solid.

3-5 Challenge:

Design a stable storage or transport system for logs of different diameters (use dowels, pencils, or PVC tubes ranging from 0.5 to 2 inches). Your design must:

- Stack at least 12 logs vertically without tipping
- Keep logs from rolling away when tilted 15°
- Use only wood, rope, or cardboard materials
- Allow a person to remove any single log without destabilizing the pile

Test your design and redesign if it fails. Measure stability with a simple "tilt test."

EDP Phase Targeted

Ask / Define Problem — The visible arrangement of logs with varying sizes presents a real-world storage or stability challenge. Students must first identify why stacking matters (weight, space, access, safety) before jumping to a solution. This grounds the challenge in authentic constraint.

Suggested Materials

- Wooden dowels or branches cut to various lengths (0.5–2 inches diameter)
- Rope or twine



Wood — Engineering Challenge

- Cardboard tubes or scrap wood pieces
- Tape (duct tape or wood-safe alternatives)
- A small table or platform to test tilting/stability

Estimated Time

45–60 minutes (single session for K-2; two 30-minute sessions recommended for 3-5 to allow redesign iteration)

Why This Works for Teachers

This task directly addresses NGSS K-ETS1-1 and 2-ETS1-1 (asking questions and defining problems) by having students recognize that different-sized materials require thoughtful arrangement, and 3-5-ETS1-1 (defining design constraints) by making them balance stability, access, and material use.