



TOWER CHALLENGE

ENGINEERING: INVESTIGATION, DESIGN, EVALUATION

Every child is different. Do what works best for encouraging each child's exploration of this suggested activity.

OBJECTIVE OF THIS INVESTIGATION:

Children will build a tower that can hold and protect an animal by engaging in planning, exploration of materials, building a structure, and testing whether it will keep the animal safe.

MATERIALS:

- Blocks to build a tower (preferably a variety of blocks/building materials such as large & small wooden blocks, cardboard boxes, etc.)
- Two stuffed animals (one that could fit on the block tower and one that stands up tall)

PROGRESSION STEPS (ENGINEERING: INVESTIGATION, DESIGN, EVALUATION):

Visit [STEMIE Learning Trajectories](#) for details

- Trial & Error Investigator
- Creative Investigator
- Guided Designer
- Planner Designer
- Guided Evaluator

THIS INVESTIGATION:

1. Gather children together and introduce the problem:
“This cat is trying to catch this sloth. Can you help me build a tower big enough that the sloth can fit on top BUT tall enough that the cat can’t reach the sloth?”
2. Ask children to think about what they need to do.
“How high do we need to build the tower? How do you know?” (Guided Designer)
 - Allow children to engage with materials to build their tower. Do they seem to use trial and error as they build? **(Trial & Error Investigator)** OR do children seem to intentionally plan and build their towers based on knowledge, experience, considering the appropriateness of the materials, etc.? **(Creative Investigator; Planner Designer)**
3. After children design their tower, ask them test it out!
“Let’s try out your design. Did it work? How do you know?”
 - If their design did not work at first, encourage children to evaluate and reflect their design...

VOCABULARY:

- Tall
- Base
- Design
- Plan
- Evaluate

ADAPTATIONS:

See [A Guide to Adaptations](#) for general ideas and strategies

Environment:

- If possible, work in smaller groups or 1:1 with students who struggle to come up with ideas or build.
- Allow building the tower with various seating arrangements, such as building the tower while sitting on the ground or sitting on a chair and use a table





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THIS INVESTIGATION (CONTINUED):

"It looks like this design didn't keep the animal safe, but let's think together how we can fix it! What do you think?" (Guided Evaluator)

4. After children complete the first tower, add another problem:

"Oh no! But cats can jump. The cat can still reach the sloth. What can we do to keep the sloth safe?"

Again, allow children to engage with materials to fix, add to, or expand on their existing design. Do children use trial and error (**Trial & Error Investigator**), or do they plan and build with intentionality (**Creative Investigator; Planner Designer**)?

If children need support, encourage children to build another, taller tower. **"Do you think a taller tower might help keep the sloth safe?"**

5. Encourage children to brainstorm other ideas to keep the stuffed animal safe.

"What are other ways we can keep our animal safe?"

ADAPTATIONS (CONTINUED)

Materials:

- Use larger blocks or interlocking blocks for easier stacking
- Use more motivating animals or toys as the predator and prey

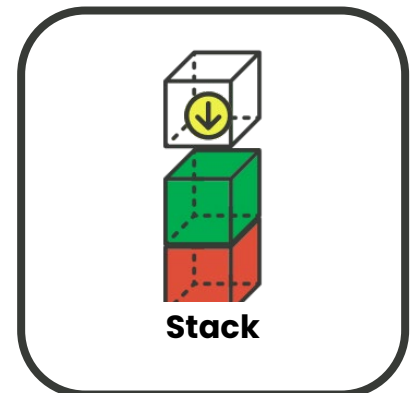
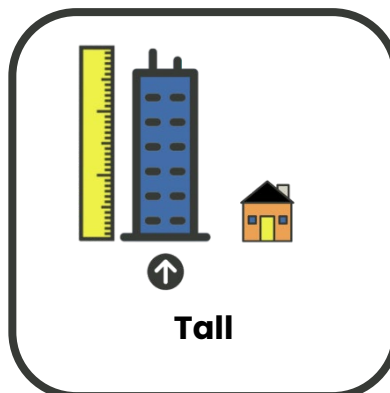
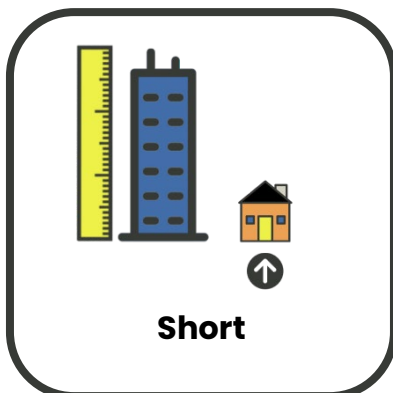
Instruction:

- Include visual cue cards (e.g., tall, base)
- Model building the tower and use pictures or story to demonstrate the problem.

HOW TO CONTINUE THIS INVESTIGATION:

- Add more constraints for the children (try three instead of two)
- Encourage children to plan before they build! This could be verbally talking it out or, if appropriate, drawing a picture of their plan.
- Encourage children to work together and share ideas/collaborate on a design.
- Challenge children to look at a previous design that didn't work and brainstorm how to improve it.

SUPPORT MATERIALS:





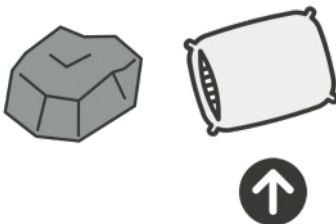
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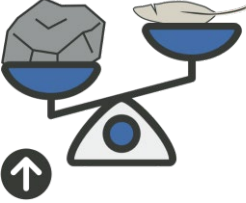
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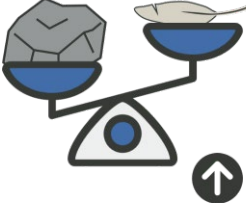
Use the blank ones to make your own!



Soft



Heavy



Light

