Objective

By the end of this lesson, the student will understand the basic principles of creating a stable structure using everyday materials. They will learn about balance, support, and how different shapes can affect stability.

Materials and Prep

- Various household items (e.g., books, boxes, plastic cups, or any small items that can be stacked)
- Space to build (a table or floor area free of clutter)
- Paper and pencil for sketching ideas

Before starting the lesson, make sure the student has a clear area to work in and gather various items that can be used for building. Discuss with them that they will be creating different structures and testing their stability.

Activities

- **Build a Tower:**

  The student will use the household items to build the tallest tower they can. They can experiment with different shapes and stacking methods to see what works best.

- **Shape Exploration:**

  Discuss how different shapes provide different levels of stability. The student can create structures using only triangles, squares, or circles and see which shape is the strongest.

- **Stability Test:**

  Once the structures are built, the student can gently push them to test their stability. They can take notes on which structures held up best and why.

- **Sketch and Plan:**

  Before building, encourage the student to sketch their ideas for a stable structure. This will help them think critically about their design before they start building.

Talking Points

- "What do you think makes a structure strong?"
- "Can you name some shapes? Which ones do you think are the strongest?"
- "Why do you think some towers fall over? What could we change to make them better?"
- "How does the base of a structure help it stay stable?"
- "What happens if we add more weight to the top? How does that change things?"
- "Can you think of a building or a bridge that you know? What shapes do you see in it?"
- "Why do you think engineers and architects use different shapes for their designs?"
- "What was your favorite structure that you built today? Why did you like it?"