

Unit Name: Stacking Engineering Challenge

What are we doing? Children will be experimenting with a variety of materials that can stack on top of one another, possibly creating a freestanding structure.

Purpose/Why? Taken from the WA State Early Learning and Development Guidelines

1. Children are developing eye-hand coordination. For this activity children will be placing items on top of each other.
2. Children are developing their own thought process and ways to figure things out. This lesson gives children the opportunity to try stacking a variety of items. They will discover ways to create a taller, more stable structure.
3. Children are learning to think of a different way to do something when confronting a problem. When a structure falls, children will think about and plan another way to create it to be more stable.

Materials:

Provided:

Animals Upon Animals Game, with instructions

12 plastic cups

24 wooden cubes

Wooden Craft Sticks

You Will Need to Provide:

Any additional items around the house that your child could stack (such as empty boxes, cans from the pantry, marshmallows, plastic containers, etc.) *Remember to be mindful of items that could be a choking hazard for young children.*

Books:

The Most Magnificent Thing, by Ashley Spires

Gus's Garage, by Leo Timmers

The Stack, by Vanessa Roeder



Quick Start: Explore Animals Upon Animals Game

Let your child explore the animal pieces from the game **Animal Upon Animal**. Encourage your child to name, sort, and count the animals. Then encourage them to try to stack the same animals on top of each other. Try stacking a variety of animals on top of each other.



Questions to ask:

- Which animals are easier to stack? Why?
- Which animals are harder to stack? Why?
- How many animals can we stack?



Vocabulary Builder

In your discussion with the children use such words as:

- Balance
- Steady
- Stable
- Equilibrium



Deeper Dive

Introduce your child to the formal rules of playing **Animal Upon Animal**. Encourage your child to count the animals to start the game. Roll and dice and follow the directions on the dice (placing one or two animals or following the picture instruction). Adapt the game to meet the needs of your child. How many animals can ride on the crocodile? Play again and see if you can add more than the time before.



Quick Start: Other Stacking Objects

Let your child explore the other stacking items (cups, blocks, craft sticks). Before showing your child how to stack cups in a pyramid or end to end allow them to explore and discover on their own. Encourage your child to use some of all the pieces to make one structure. How can blocks and sticks help make the cup structure taller?



Questions to ask:

- What can you do to make it higher?
- What can you do to make it steadier?
- How tall is it?



Deeper Dive

Encourage your child to create a bridge using the building materials. Is it strong enough for the wooden animals to cross? Can they make it longer? Taller? Steadier?

What other kind of structure can your child build by stacking the items?



Vocabulary Builder

- Taller/Shorter
- Measure
- Compare
- Strong