

Elevator Engineering

How can you move people up and down in a building? Stairs are one way. Elevators are another. They have many benefits - they help people move to other floors quickly, they allow people with carts and other large items to go to different floors, and they make buildings more accessible to people. In this activity, learners will use household items to design and build an elevator that will carry 2 passengers to a height of 16 inches...or higher!



Recommended Age: 6+

Time needed: 20+ minutes

What You Need

- Recycled items, such as toilet paper and paper towel tubes, cereal boxes, yogurt containers, egg cartons, etc.
- Assorted craft supplies, such as craft sticks, pipe cleaners, brass fasteners, rubber bands, straws, paper clips, etc.
- String, yarn, or fishing line
- Tape
- Scissors
- 2 small toys, figurines, or something similar to use as passengers
- Ruler or tape measure



What You Do

- Find two small toys to use as passengers. Your challenge is to lift your passengers at least 16 inches up.
- Look at the materials you have and make a plan for your elevator. Think about the following when creating your plan:
 - The elevator needs to include a platform to move the passengers.
 - You cannot touch the platform or the passengers while the elevator is in motion.



- The passengers must go up and down in the elevator without falling off the platform.
- If you have an idea that needs supplies you didn't grab at first, that's OK! Go get them now.
- Create your elevator and test it out!
- Remember, engineers often create a design, try it out, then improve it and test it again. This can happen a lot before they decide the design is what they want it to be. Keep testing and improving your design until you think it is ready!



Tips for Adults

- Your child may need a second pair of hands, or someone to brainstorm with. It's OK to help, but be sure to let your child take the lead.
- If your child wants additional challenges:
 - Add more passengers. How will you change your design?
 - The elevator is needed for a taller building! Make changes to your current elevator design so that it can go at least twice as high as the first design.

What's Going On?

For a pretty simple explanation of how elevators work, check out this video!

<https://mocomi.com/how-do-elevators-work/>

Learning and Skills Connection

- **Thinking creatively and imaginatively:** Envisioning possibilities, solutions, and forms of expression; having hunches; thinking outside the box; problem finding and solving
- **Working flexibly:** Incorporating and revising ideas based on new information, employing objectivity and acknowledging subjectivity
- **Persistence:** Focusing, sticking to it, learning from mistakes

Doing STEAM with Kids

STEAM stands for Science, Technology, Engineering, Art, and Math. There are lots of ways you can explore these letters, apart or together. Ask your child to make predictions, describe what they see, and to imagine possibilities and solutions. Don't worry so much about the "right" answer. Developing curiosity, and problem-solving skills are important first steps to doing STEAM!

