



Dear Families,

Your child is about to begin an **IEEE TryEngineering Early Childhood STEM Unit** designed to spark curiosity, build confidence, and introduce young learners to the exciting world of engineering. TryEngineering's Early Childhood Collection is built around exploration, creativity, and hands-on problem-solving, helping children learn how engineers think, build solutions, test ideas, and improve their designs.

What is TryEngineering?

TryEngineering.org is an educational program powered by [IEEE](http://IEEE.org), the world's largest technical professional organization. We provide free STEM resources, lesson plans, and programs that help educators and families bring engineering to life for school-aged children. Our goal is to make engineering accessible, engaging, and joyful for all learners!

All About TryEngineering's *Critical Load - Early Childhood Adaptation*

In this unit, called ***Critical Load-Early Childhood Adaptation***, students will become engineers who explore how shapes help structures stay strong. Students will investigate which shapes support the most weight, then design, build, and test a tower made from index cards and tape. Through testing, they will discover that every structure has a **critical load**—the maximum amount of weight it can hold before it collapses.

- **Part 1: Let's Learn About Strong Structures.** Students will begin thinking like engineers by exploring what makes a structure strong and learn that every structure has a critical load.
- **Part 2: Strong Shapes - How Structures Support Weight.** Students will act as engineers by exploring how different shapes, not just materials, affect a structure's strength.
- **Part 3: Design, Build, and Test A Strong Structure.** Students will act as engineers by designing, building, and testing their own structure to determine its critical load.
- **Part 4: Redesign & Share.** Students will redesign their structure to increase its critical load and present their results

How Families Can Support Learning at Home

Talk about strong structures in the real world. Look around your home or neighborhood for things that hold weight: tables, bridges, shelves, playground equipment, or even a stack of books. Ask your child: *What helps this stay strong? What shape do you notice? What might make it tip or collapse?*

Want to learn more about strong structures? Watch [All About Strong and Stable Structures](#) by The Digital Classroom Experience.

Try a “strong shapes” test at home. Give your child a few index cards or pieces of paper. Invite them to fold or roll the paper into different shapes—tubes, triangles, squares—and gently place small objects on top (toy cars, crayons, coins). Ask: *What shape holds the most weight? Which shape collapses first? How could we make it stronger?*

This activity mirrors the classroom investigation where students test how shapes affect the strength of a structure. Watch [Columns: Finding the Strongest Shape](#) by PBS Learning Media for more information.

Read about buildings and structures. Librarians can help you find books that match your child’s age and interests. Here are some early childhood books that discuss building, structures, and civil engineering:

- *Dreaming Up: A Celebration of Building* by Christy Hale
- *Iggie Peck, Architect* by Andrea Beaty
- *Will the Civil Engineer* by Chadd Kahlisdorf

Draw a structure together. Invite your child to draw a tower or building. Discuss what shapes they used, how the structure stays balanced, where the strongest parts are, and what might make it fall.

We hope you enjoy hearing about your child’s discoveries as they explore critical load and design, build, test, and improve their own strong structures. Thank you for supporting their curiosity and early engineering learning!

For more information about TryEngineering or to explore STEM activities that you can do at home with your family, visit [TryEngineering.org](https://tryengineering.org).

Sincerely,

The TryEngineering Team

