



ENGINEERING DESIGN PROCESS



The engineering design process is a cycle that engineers follow to create and test solutions to a problem.

We also use this process to solve problems every day, like figuring out a food recipe or building a bookshelf. Talking about the engineering design process with children and families and using the steps during playful learning experiences is a great way to get children interested in engineering and help them develop problem-solving skills.

ASK

Ask questions to understand the problem and what you need to solve it.

IMAGINE

Brainstorm as many possible solutions and designs as you can.

PLAN

Pick a design and decide how you will use your materials.

CREATE

Build and test your design to see how well it solves the problem.

IMPROVE

Make changes to your design based on what you learn.



Want to learn more? Visit the Head Start on Engineering website: www.terc.edu/hse

What does engineering look like for young children and their families?



Engineering is more than buildings, bridges, and roads

Engineering is important for designing and creating the structures, technologies, and processes all around us. And it's a problem-solving process that each of us use in our jobs and everyday lives.



Children can engage in engineering at an early age

Through our research, we have documented the many ways that preschool-age children and their families engage in complex engineering design practices. These families are helping us learn about all the clever and imaginative ways young children can engage with engineering.



The engineering cycle is flexible

The engineering design process on this handout is a helpful model. But children, families, and even professional engineers don't follow these steps the same way every time. Children can engage with only one or two steps, or they can use the steps in a different order—like testing a design and then deciding they have to go back and do some planning.



Play and imagination enrich children's engineering engagement

The imagination, creativity, and playful approaches children and families bring to engineering activities enhance and deepen their engineering engagement, helping them find creative solutions or extend the activities in ways that connect with their interests. Incorporating storybook characters and stuffed animals in engineering activities encourages children to practice empathy and create solutions that meet the needs of others.



Engineering supports child and family learning goals

Families use engineering activities to support many other learning and development goals. For example, the activities can help families spend more time together, practice collaboration among siblings, support bilingual language development, or talk about dealing with frustration and other strong emotions.