TECH TIP: What is Engineering?

Engineering, in its simplest form, is the process of designing something to meet a need or solve a real-world problem. At The Tech, we talk about engineering and innovation being about creative problem-solving; our goal is to help everyone find the problem they are passionate about solving and to see themselves as capable of solving it. The engineering design process helps learners develop problem-solving skills and perseverance and apply those to other challenges they encounter. Being explicit about engineering and engineers as part of learning activities helps learners to envision themselves as engineers and to see their problem-solving power.

INTRODUCING ENGINEERING AND ENGINEERS

Discuss engineering and engineers with students to prepare them to think like and see themselves as engineers and problem-solvers — and to help them to get excited about what they are going to do!

- Ask learners to share about a time when they had to solve a problem or fix something.
- Remind them that any time they work to create a solution to a problem, they are engineers.
- Tell students that they are going to be engineers during this project.
- Ask them, *What do you think engineering is? What do you think an engineer does?*
- Explain what engineers and engineering are. Connect with and include students' ideas (shared earlier) as you explain. Sample explanations:
    - An engineer is a person who designs and builds complex products, machines, systems or structures to solve a problem or meet a need. Engineers want to know how and why things work. Engineers are changing the world all the time. They think up creative solutions and work with other people to invent, design and create solutions to real-world problems.
    - Engineering is the process that engineers go through to imagine, create, build and test a solution.
- Have students share ideas of problems an engineer might work on. Guide them to think of new ideas, beyond the more obvious bridges, vehicles or electronics (e.g., software design, city planning, new medications or medical devices, new materials or systems).
- Ask learners what problems they are interested in working on and solving (give them time to think and record ideas before they share). Record class ideas in a place that you all can revisit to stay inspired.

FACILITATIVE QUESTIONS

- What do you think engineering is? What do you think an engineer does?
- What are examples of problems you have solved or things that you have created?
- What are some items you use in your life that help you? Who invented/built/developed them?
- What kinds of projects or objects might engineers work on?
- What are the problems you see in your school, neighborhood or the world that you would really like to help solve?
- Think about the puzzles of [transporting food, deciding where streets are, building a skyscraper, etc.]. How do you think the solutions to these problems are developed?