Engineering and Technology Programming Resources

STAR_Net hands-on activities were developed for library staff to use to provide STEM programs for different age groups. The activities rely on inexpensive materials, were designed to be easy to do, and can be flexibly implemented. Library and STEM professionals provided guidance in the development of each activity.

Design a Park

Participants are invited to imagine the park of their dreams! In small groups, they place moveable pieces on a grid, iterating on their plan together to create a plan for a community park. A variety of park features are offered as choices to include on the map, including a playground, skate park, water features, picnic areas, trails, and more.

Team Machine

This classic “icebreaker” activity challenges participants to create a simple human machine. A group of at least 6 and up to 20 people work together to pass a beanbag in a set pattern as quickly as possible. Participants rearrange themselves to achieve faster speeds. The social nature of *Team Machine* allows participants to experience how engineers often work in teams, with different people contributing in different ways, to take on a challenge.

Water Wedges
Participants consider how a simple machine, a wedge, can be used to push materials apart — and apply the concept to creating a model boat. In small groups, they construct and test two types of boats — such as a raft and another with a bow to serve as a wedge — to see which would move faster through the water during a race at a community park.

Levers at Play
Participants consider how a simple machine, a lever, turns a small push or pull (a small force) into a larger — or stronger — push or pull (a larger force) — and apply the concept to designing a model seesaw. The challenge is set in an age-appropriate context of addressing one or more real-world challenges, such as designing a seesaw on which two people of different weights (e.g., a child and parent) or a person using a wheelchair can ride.

Low-Tech Water Filter for High-Impact Clean
Participants consider the water features they might enjoy at a community park — a pond, brook, water playground (or "sprayground"), or pool, — and what happens to the water over time. In small groups, they explore and test common materials to identify the best low-tech materials that can be used to help filter water.

Wind Turbine Tech Challenge
Participants consider what they know about how wind turbines work and how wind energy could be used to provide electricity to a community park. In small groups, they build a model wind turbine, then explore and test common materials to identify a modification that would enable their model to better catch the wind.

Implementation Guide
Find tips for using *Playful Building* activities in your programs, along with facilitator background information, in the *Implementation Guide*.

Teacher's Guide
Download a four-page *Engineering and Technology Programming Teacher's Guide* and customize it with your library's information before disseminating it to local schools. Developed in collaboration with teachers, the guide provides information for connecting *STAR_Net Playful Building* programs with classroom learning.