

Objective

By the end of this lesson, the student will have built a creative Lego structure using their kit, learned about basic engineering principles, and developed problem-solving skills through hands-on construction and design challenges.

Materials and Prep

- A Lego kit suitable for ages 10+
- A clean, flat workspace
- A timer (optional, can use a phone or watch)
- Pencil and paper for sketching designs

Before starting the lesson, ensure the workspace is organized and all Lego pieces are accessible. Familiarize yourself with the Lego kit and its instructions if available.

Activities

1. Design Your Structure

Start by sketching your design on paper. Think about what you want to build – it could be a house, a vehicle, or something from your imagination! This activity helps you plan your build and visualize your ideas.

2. Build Challenge

Set a timer for 30 minutes and try to build your structure as quickly as possible using the pieces from your kit. This challenge will test your speed and creativity!

3. Engineering Principles

Discuss why certain structures are stable or unstable. Use your built structure to demonstrate concepts like balance and weight distribution. Ask questions like, "Why does this part fall over?"

4. Show and Tell

Present your finished structure. Explain what you built, the challenges you faced, and how you solved them. This helps develop communication skills and boosts confidence.

Talking Points

• What is engineering?

"Engineering is all about designing and building things. It's how we create structures, machines, and even software!"

• Why is planning important?

"Planning helps us know what we want to build and how to do it. Just like in a recipe, if we skip steps, it might not turn out right!"

• What makes a structure stable?

"A stable structure has a strong base and balanced weight. If you build too high without

enough support, it can topple over!"

- **How can we solve problems while building?**

"When something doesn't work, we can think of different ways to fix it. Sometimes, switching pieces or changing our design can help!"

- **What was your favorite part of building?**

"Every builder has a favorite part! It could be the design, the building process, or even showing it off to others!"