Introduction to Engineering

Day 1

Lesson Overview

The purpose of this lesson is to introduce students to the field of engineering. It will cover what engineers do, the different types of engineering fields, and what students can expect to learn in future lessons. The lesson will also incorporate a fun, hands-on activity inspired by the Science Olympiad event "Write It Do It" (WIDI), where students will practice communicating precise instructions for building a simple structure.

Lesson Objectives

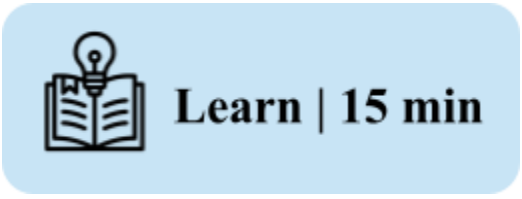
By the end of this lesson, students will be able to:

- Understand the general role of engineers and why engineering is important.
- Identify different types of engineering disciplines (civil, mechanical, aerospace, electrical, etc.).
- Understand how collaboration and communication are essential in engineering.
- Participate in an activity that emphasizes communication and instruction-giving.

Vocabulary

1. **Engineering:** The application of science and mathematics to solve problems by designing, building, and maintaining structures, systems, and processes.

Lesson Plan

INTRO TO ENGINEERING PRESENTATION 	**Objective**: Provide an introduction to engineering, the common goal of engineering (solving problems to make the world a better place), and brief overview of engineering fields. **Materials**: PowerPoint Presentation ("Day 1 - Intro to Engineering.pptx")

WRITE IT BUILD IT

Objective: Students will work in pairs of 2 with one “writer” and one “builder.” To recreate a model to the best of their ability.

Materials:

- Legos, building blocks, or simple household materials (such as straws, paperclips, rubber bands)
- Paper and pencils
- Timer

Instructions:

- Divide students into pairs:
- One student will be the “writer” and the other the “builder.”
- Each pair gets a set of identical building materials (blocks, Legos, or other objects).
- Phase 1: Write It (10-15 minutes):
- The teacher will display a simple structure (using the provided materials) that the “writer” will see, but the “builder” will not.
- The “writer” must then write down step-by-step instructions on how to build the structure, using only words—no diagrams, gestures, or photos allowed.
- The "builder" cannot see the original structure at any time during this phase.
- Phase 2: Do It (15-20 minutes):
- Once instructions are complete, the “builder” will use them to build the structure.

	• The “builder” must follow the written instructions exactly as they are written, without asking any clarifying questions.
REFLECTION 	**Reflection**: • After the build is complete, compare the original structure to the recreated one and discuss any differences or challenges faced in communication. • What made writing instructions difficult? • What was challenging about following instructions? • Why is communication important?