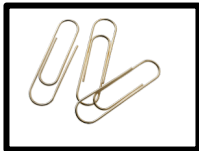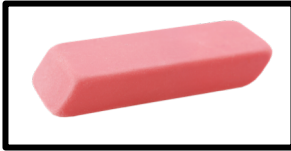# TECHNOLOGY
ALL AROUND US

PURPOSE

IN *TECHNOLOGY ALL AROUND US,* STUDENTS WILL:

- Reflect upon their knowledge of technology.

- Observe a variety of everyday objects and categorize them.

- Define what is technology.

BACKGROUND FOR THE TEACHER

The word "technology" often creates in students, as well as adults, the ideas of electronic devices or latest computer type gadgets. When the word "technology" is mentioned, many misconceptions are revealed of what technology is. In this lesson, technology is defined and how technology is connected to the field of engineering. One definition of technology is:

> *"Technology is an <u>object</u> (marble, spoon), a <u>system</u> (pen, pencil, glue stick), or a <u>process</u> (step-by-step procedure that is man-made, a recipe) whose purpose is to solve a problem or make life easier (meets a need)."*

Once all the students understand technology, the need to connect it to engineering is the next step (The next lesson). Engineering is where students will plan, create, and improve their projects.
Engineering is defined as:

> *"Engineering is using anything human-made (creativity, understanding of materials, tools, mathematics, and science) to design things to solve a problem or fulfill a desire."*

Students will use the Engineering Design Process to get a better understanding of engineering and how it is used in daily practices.
The Engineering Design Process (EDP) has many steps, however, for elementary purposes, the EDP, according to LAUSD Science and Engineering Advisors, can be summed up in five steps.

MATERIALS

TECHNOLOGY ALL AROUND US

FOR EACH STUDENT

- Student science notebook

FOR EACH GROUP

- A paper bag containing 1 common classroom object:
    - Spoon
    - Glue stick
    - Paper cup or plastic cup
    - Recipe/instructions for something to do make, or put together
    - Paperclip
    - Pencil
    - Pen
    - Straw
    - Tape with a dispenser
    - Brad
    - Binder clip
    - Marker
    - Dry erase marker
    - Eraser
    - Ruler

FOR THE LESSON

- Chart paper for Vocabulary and Concepts
- Markers
- 1 paper bag per group (if paper bags are not available use containers that can hide the contents from the students)

GETTING READY

TECHNOLOGY ALL AROUND US

1. **Schedule The Engineering Session**

   The lesson will take about 45 - 60 minutes

2. **Obtain The Common Classroom Materials And Paper Bags**

   Assemble the paper bags with 1 object. When preparing bags make sure the bags are not all the same. It is important for discussion purposes that class experiences a variety of objects.

3. **Prepare Charts**

   Write the question on the chart or the board:

   - **What is technology?**

   Prepare another chart with the following questions:

   - **What is the technology you have?**
   - **What does your technology do?**
   - **What problem does it solve?**
   - **How else could you use it?**
   - **What materials are used to make it?**
   - **What other materials could be used to make it?**

4. **Engineering Design Process Poster**

   If you have a poster maker at school, make an EDP poster.

   If not, enlarge each section of the EDP and create a poster.

GUIDING THE LESSON

TECHNOLOGY ALL AROUND US

1. **Focus Question: "What Is Technology?"**

   - Ask students "What is technology? When you hear the word technology, what do you think it means?"
   - Record student answers on the board or on chart paper.
   - Answers may include but not limited to:

        - Computers
        - Smart boards
        - Electric pencil sharpeners
        - Smart phones
        - Tablets
        - iPads, iWatches, iPods
        - Internet
        - Virtual games

2. **Project Teams And Bags**

   Having small groups helps students to collaborate, think together, Discourse (Talk Moves), share observations, and practice 21st century skills.

   - Have students get into their project design teams.
   - Give each team a bag with technology item in the bag.
   - Explain to students they have some technology in each bag.

3. **Students Should Have their Science Notebooks Ready**

   This is another opportunity for the students to record their thinking while going through the activity.

4. **Display The List Of Questions About Technology:**

   - Give groups 10 minutes to discuss the questions regarding the technology in their bags.

        o **What is the technology?**
        o **What does your technology do?**
        o **What problem does it solve?**
        o **How else could you use it?**
        o **What materials are used to make it?**
        o **What other materials could be used to make it?**

5. **Reflection, Share Out, And Record**

- Bring class back together for sharing about their technology in the bag. Discuss the questions.
- Introduce three categories of technology and the definition of technology.

  "Technology is an <u>object</u> (marble, spoon), a <u>system</u> (pen, pencil, glue stick), or a <u>process</u> (step-by-step procedure that is man-made, a recipe) whose purpose is to solve a problem or make life easier (meets a need)."

- Ask students to review objects in their bags again and categorize them into the three categories.

  - **Object**: is a thing, (like a spoon, paper cup, straw, brad, paperclip, eraser)
  - **System**: has parts put together to reach a goal, (like a sticky note, binder clip, glue stick, pencil, pen, tape with dispenser, marker, dry erase marker)
  - **Process**: series of actions or steps leading to a results- recipe, instructions (like IKEA directions for assembling furniture, other examples include, manual can opener,   egg beater)

6. **Science Notebook Entry**
   Once each group has had an opportunity to discuss ask students to record in their notebooks the categories and list the objects from their bags under each category.

7. **(Optional)**
   - Ask students to look around the classroom and see if they could find something that is not technology. How do we know it is not technology?
   - Questions to consider: Does it solve a problem? What can you do with it?
   - Have students who have a spoon in their bag hold it up. Ask, "What do you do with a spoon? What else can you do with a spoon? If you were to redesign the spoon to turn it into a shovel, how would you change it?"