UNIT 1: TECHNOLOGY AND TECHNOLOGICAL PROCESSES

Technology creates objects and processes to satisfy needs and to solve problems. This makes our lives more comfortable and our work more productive. For this purpose, technology uses knowledge (science), tools and skills.

1. **Relationship between technology and science.**

The relationship between science and technology is strong. For example, to make a lens we need to know the operation of the human eye and the light properties. Once the first basic lens was invented, it helped to improve our understanding of the eye and the light, but it also contributed to the development of other sciences like astronomy, biology, medicine, etc.

### ACTIVITIES

1. Think of a technological object and explain its relationship with science in the same way you have read in the example before.

2. **Relationship between technology and society.**

Technology satisfies society’s needs and helps society to develop, but technological development also creates some problems:

1. Technological activities **overexploit** natural limited resources (animal, vegetable and mineral).
2. Many technological processes produce unwanted **by-products** called **pollution**.
3. Sometimes we don’t use technology for peaceful purposes: **weapons** are also technological products!
4. Some technological developments **raise ethical** questions, especially in biotechnology and genetic **engineering**.

Nowadays technology has the challenge to find a sustainable development so that future human generations can enjoy the benefits of industrial products without giving up living in a healthy environment.

### ACTIVITIES

2. Think of examples to explain each of the four problems (mentioned above) that technology can make to society.
3. What kinds of waste products are produced in your school daily? What can we do to recycle or reduce them?

3. **The stages of technological processes.**

Every technological process consists of the following stages. Each stage requires several actions:

1. **The need:** Analyse the need or problem. Studying similar cases and their solutions may help.
2. **The idea:** Propose possible solutions. Discuss with your teammates and choose the best solution.

3. **Develop the idea:**
   a. Prepare **plans** and **measurements** of the object you are going to construct.
   b. Choose the necessary tools, materials and **labour** you are going to need.
   c. Prepare an **estimate of costs**.
   d. Define the action plan, what means a list of all the actions you will need to **carry out** to solve the problem, adding a time frame (an estimate of the time required for each action).

4. **Execution:** We actually carry out the actions we have planned before.

5. **Check and evaluate:** We discuss with our teammates:
   a. Does the object effectively satisfy our need?
   b. **Use:** Does it work? Is it easy to use?
   c. **Safety:** Is it safe for use? Are any of its parts dangerous, inflammable or poisonous?
   d. **Maintenance:** Does it require special care to keep it in good condition?
   e. **Durability:** How long will it last? Is it likely to get broken easily?
   f. **Materials:** Can the object be made of cheaper/recyclable/reusable/etc. materials?
   g. **Appearance:** Will the object’s appearance attracts people to use it?
   h. **Possible modifications:** Based on your answers to the previous questions, is there any part of the **design** you could improve?

6. **Report:** Write a **report** to describe your work, the problems you have found during the process and the way you have solved them in order to **record** what you have learnt for future use.

4. **The technological project.**

   A technological project is a document in which we describe very **accurately** all the items related to the technological process.

   The technological project usually contains the following sections:
   1. **Front page:** It must contain the title of the project, the names of the team members, group, school year and name of the school.
   2. **Index:** A list of the report contents and page numbers.
   3. **Introduction:** A short description of the need or problem we wanted to solve by creating a new object or by developing a new technological process.
   4. **Solution description:** A description of the chosen solution.
   5. **Drawings:** They must be done using technical drawing instruments (**ruler**, **set square**, **pair of compasses**, etc.) and must include **dimensions**.
   6. **Instructions on how to use and maintain the object.**
   7. **Action plan and execution:** Describe it **step by step**. Include a description of the problems you found and how you solved them.
   8. **List of resources and budget:** It must contain the materials, special tools and other resources needed to build the solution. It must show quantities and costs of each item.
   9. **Evaluation:** Analysis of the process and explanation of the **lessons learned**.

**ACTIVITIES**

4. Describe the materials, tools and procedures needed to:
   a. Make a skateboard.
   b. Hang a picture on a wall.