ثانوية التكنولوجيا التطبيقية
Applied Technology High School

Project Planning

Module 2
Project Design

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Module 2
Project Design

Module Objectives

Upon successful completion of this module, students will be:

- Define the project specifications from an engineer's perspective.
- Identify the steps involved in project design.
- Complete the project design specifications for the project chosen.

Module Contents:

2.1 Introduction to Project Design

This module will help you define the design specifications for the project that you have chosen. The specifications could be fixed or could be changed, and the findings from your research should form the basis of your design specification. The specification checklist given below could be used for general guidance. However, more items could be added based on the project requirements.

- Use and Performance
- Size, Weight and Appearance
- Parts
- Safety

2.2 Project Design Steps

1. **Use and Performance:**

   Indicate the main purpose of the project and its function.

   Example 1: In the case of a "Water Level Control System", the "Use and Performance" section would include the following:

   The main purpose of the project is to regulate the water level in a tank or a container.

   The specifications would include the following:

   - *The conductivity sensor is used as a level detector.*
   - *The water level is regulated by turning on and off the pump based on the feedback from the conductivity sensor.*
   - *The pump is operated until the water comes up to the level of the conductivity sensor's probe, and then the level is held there, automatically, based on the feedback from the conductivity sensor.*

Example 2: If we consider the example of an elevator system, *the mainpurpose of the Elevator system is to transport passengers from one floor to the next in a four storey building*.

The design specifications would include the following:

- *The elevator must move upwards and downwards between floors.*
- *Passengers should have an option to select the floor.*
- *The presence of the elevator must be detected at every floor.*
- *The direction of elevator movement must be controlled.*
- *The elevator must sense input and accomplish the required task.*

Activity 6: Complete the “Use & Performance” section for your project:

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2. **Size, Weight and Appearance:**

   The size and weight affect the cost, components used and the space required.

   Activity 7: Include the ‘Size, Weight & Appearance” details for your project. Include even the color if required.

3. **Parts:**

Include the major parts required. This could be a preliminary list of parts as a detailed list could be finalized after the circuit diagram is completed in module-3. For example, for an elevator system, once the purpose and function of the project has been identified, it is easier to list the required parts as shown in Table 2.1.

Function	**Parts**
The lift must move upwards and downwards between floors	Motor, pulley and steel rope
Passengers should have an option to select the floor	Switches
The lift presence must be detected at every floor	Sensors
The direction of lift movement must be controlled	Relays
The lift must sense input and accomplish the required task	Controller

Activity 8: Identify your project tasks and list the parts.

Function	**Parts**

4. **Safety:**It is important to note the safety requirements for every project.

   Activity 9: Include the safety aspects, foreseen safety hazards and warning labels or instructions that could be used for this project.