



Moving Shop Sign

Introduction

A sports shop owner wants to label the various areas of the shop with moving signs that relate to the equipment and clothing sold in that area, e.g. the swimmer above. The signs will be made from resistant materials.

Design Brief

Design and make a scale model of an animated sign for the swimming area of the sports shop.

Specifications

- The sign must include a moving swimmer and shapes that represent water.
- The full size swimming sign must be large enough to be seen from a short distance, e.g. 10 metres.
- There must be a way of stopping and starting the movement of the swimmer
- The swimming sign must be a complete working system that the shop owner can use without having to use tools to install it, or to stop and start it.
- Parts of the mechanism that pose a hazard must be covered by a guard.
- The swimming sign must withstand continuous use, i.e.
 - it must not fall apart during use
 - it must not overheat
 - moving parts in contact must not wear out.
- The swimming sign must be safe to use.
- The swimming sign must have a bright, colourful finish.

Problem Solving

Devise a method of:

- making the swimmer's leg/s move up and down
- making the swimmer's two arms appear to be doing "front crawl"
- making the waves move
- hanging the sign.

Learning Objectives

Students will develop their D&T capability by designing and making an original product of good quality that satisfies the requirements of the design brief.

By the end of the assignment, students will know that:

- movement attracts attention
- mechanisms are used to:
 - transmit motion and force
 - convert one type of motion and force into another type of motion and force
- a mechanical system consists of input, process/control and output blocks and may incorporate feedback in the system, e.g. a heat sensor that monitors the temperature of a motor and switches it off when it gets too hot
- the effects of friction must be considered when designing mechanisms
- safety must be considered when designing the sign and safety features must be incorporated into the sign
- when choosing materials, designers must consider:
 - the cost of the material
 - the physical properties of the material
 - the effect of the material on the environment, i.e. the effects of:
 - mining
 - transporting the raw materials to the processing plant
 - processing the raw material
 - manufacturing processes use to make products
 - the ease with which materials can be used to make products using the tools available
 - the ease with which products can be recycled
- risk assessments of the hazards should be carried out
- ready made components such as gears and pulleys may be incorporated into mechanical systems
- safe working practices should be adopted when making the sign.

Success criteria

Each student:

- has designed and made an original product that satisfies the given design brief and specification
- has demonstrated an understanding of mechanisms by choosing appropriate devices to create the movement required by the design
- has considered the positive and negative effects of the use of the materials chosen to make the swimming sign
- has strived to achieve quality in marking out, cutting, shaping, finishing and joining their chosen materials
- has assessed the risks associated with working with the tools and materials chosen for the project and has worked safely throughout the assignment
- has evidence of having evaluated his/her work.