

Funny Face Festive Decoration

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:

- symmetrical shapes may be created using paper templates
- thermoplastics can be formed by vacuum forming and line bending
- thermoplastics soften when heated and may be bent, twisted stretched and formed
- thermoplastics remain deformed after cooling
- a vacuum former heats whole sheets of thermoplastic sheet materials (cut to match the size of the vacuum former)
- patterns for vacuum forming are usually made from resistant materials and/or clay
- pattern edges should be chamfered to allow easy removal of the vacuum formed plastic from the pattern
- plastics should be pre stretched before being vacuum formed
- hot parts of vacuum formers and heated plastics will burn skin so:
 - risk assessments of the hazards should be carried out
 - safe working practices should be adopted
- research methods may be used to find examples of flashing lamp circuits
- Crocodile Clips and similar software may be used to model electric and electronic circuits
- circuits are made using electric and electronic components
- components are connected using copper wire and/or copper tracks on a circuit board.

Success criteria

Each student:

- knows how to create a symmetrical shape in paper and how to paste it onto a thermoplastic sheet
- has designed and made an original product that satisfies the given design brief and specification
- has used tools safely and has strived to achieve quality in marking out, cutting, shaping, finishing and joining their chosen materials
- knows that thermoplastics can be softened by heating
- knows that vacuum formers are used to heat whole thermoplastic sheets (that have been cut to size to fit the vacuum former)
- knows that thermoplastics soften and can be formed when heated and become rigid again when cooled
- knows that patterns made from resistant materials and clay may be used to vacuum form 3D shapes in thermoplastic sheets
- knows that a vacuum is used to draw heated thermoplastics around a pattern and hold it in place until the plastic has cooled
- has made a pattern independently
- has vacuum formed a thermoplastic sheet independently
- has assessed the risks associated with making the funny face decoration and has worked safely throughout the assignment.
- researched examples of flashing lamp circuits
- has used Crocodile Clips or similar software to model a flashing lamp/flashing LED circuit
- has made a flashing lamp circuit
- shows evidence of having evaluated his/her work.

Funny Face Festive Decoration

Situation

Shops, public areas and homes are often decorated during festive occasions.

Design brief

Design and make a festive decoration that includes:

- a funny face
- a flashing lamp or flashing LED



Specification

The funny face flashing lamp decoration must:

- be made from thermoplastic sheet materials
- must be made using vacuum forming and/or line bending processes
- include a flashing lamp circuit that can be switched on and off
- either:
 - have a circuit holder that encloses and hides the circuit or
 - the circuit should be visible and should be a feature of the decoration
- be safe to use.

The funny face flashing lamp decoration must not:

- fall apart in use
- be dangerous to use.

What you must do

1. Analyse the design brief and specification and pick out the essential requirements.
2. Plan the design of:
 1. the funny face
 2. the flashing lamp circuit
 3. how the circuit will be fixed to the funny face.
3. Record your designs using notes and sketches and any other appropriate media.
4. Make the funny face part of the design by vacuum forming and/or cutting out a shape and line bending thermoplastic sheet material.
5. Model a flashing lamp/flashing LED circuit using "Crocodile Clips" or similar software.
6. Decide whether the flashing lamp/LED circuit will be hidden or exposed.
7. Build your flashing lamp/flashing LED circuit.
8. If your circuit will be hidden, make your circuit box.
9. Assemble the circuit, circuit box and funny face.
10. Evaluate the final product, e.g.:
 1. how good the design looks
 2. how well the design works
 3. discover what others think about your product.
11. Prepare a Risk Assessment of the hazards involved with making and using your product.
12. Work safely and complete the assignment on time.