Design technology Component Knowledge

Year 5

Electrical Systems: Doodlers

National Curriculum

Evaluate
Pupils should be taught to:
Investigate and analyse a range of existing products.

Technical knowledge
Pupils should be taught to:
Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors].

Key learning and Component knowledge

Key Learning:
L1: To understand how motors are used in electrical products.
Component Knowledge:

- Identify simple circuit components (battery, bulb, motor and switch).
- Explain what a series circuit is.
- Give examples of motorised products and explain their primary function.

Key Learning:
L2: To investigate an existing product to determine the factors that affect the product's form and function.
Component Knowledge:

- Take apart a product and reassemble it.
- Determine which parts of the product affect its function.
- Determine which parts of the product affect its form.
- Alter the way a product functions by tinkering with its configuration.

Key Learning:
L3: To apply the findings from research to develop a unique product.
Component Knowledge:

- Identify design criteria based on findings from an investigation.
- Develop their design based on key points discovered in an investigation.
- Incorporate a motor into an electrical system.

Key Learning:
L4: To develop a DIY kit for another individual to assemble their product.
Component Knowledge:

- Identify and list the materials, equipment and circuit components required to build their product.
- Explain the steps required to assemble their product.
- Explain how to build and integrate an electrical system as part of their product.

Mechanical systems: Pop up book

National Curriculum

Design
Pupils should be taught to:

Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups.
Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.

Evaluate
Pupils should be taught to:
Investigate and analyse a range of existing products.
Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.

Technical knowledge
Pupils should be taught to:
Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.
Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages].

Key learning and Component knowledge

Key Learning:
L1: To design a pop-up book.
Component Knowledge:

- Know that an input is the motion used to start a mechanism;
  Know that an output is the motion that happens as a result of starting the input.
- Know that structures use the movement of the pages to work.
- Know that mechanisms control movement.
- Design a book made up of a front cover and four pages and include a mixture of structures and mechanisms within it.

Key Learning:
L2: To follow a design brief to make pop-up book.
Component Knowledge:

- Use paper, card and glue to make the book structure.
- Make mechanisms and/or structures as detailed in their design template by using sliders, pivots and folds to produce movement.

Key Learning:
L3: To use layers and spacers to cover the working of mechanisms.
Component Knowledge:

- Complete the mechanisms and structures as detailed in their design template.
- Make their book look neater and more attractive by using layers and spacers to hide relevant parts of my mechanisms.

Key Learning:
L4: To create a high-quality product suitable for a target user.
Component Knowledge:

- Add pictures and captions to the surface decoration of the pop-up book.
- Consider the preferences and needs of the user.
- Know that good quality making should be neat, accurate and securely assembled.

Cooking and Nutrition : developing a recipe

National Curriculum

Cooking and nutrition
Pupils should be taught to:
Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

Key learning and Component knowledge

Key Learning:
L1: To know how ingredients are reared and processed.
Component Knowledge:

- Identify the ingredients in spaghetti bolognese.
- Create an informative poster.
- Explain the journey of beef from farm to table.

Key Learning:
L2: To make adaptations to design a recipe.
Component Knowledge:

- Compare two bolognese sauces.
- Research unique ingredients in different bolognese recipes.
- Plan an adaptation of a basic bolognese recipe.

Key Learning:
L3: To evaluate nutritional content.
Component Knowledge:

- Use a nutrition calculator.
- Compare nutritional values.
- Make ingredient choices based on nutritional values.
- Modify a recipe to contain different ingredient choices.

Key Learning:
L4: To practise food preparation skills.
Component Knowledge:

- Cut resistant foods like onions safely and accurately.
- Understand the safety aspects of working with hot food.
- Explain how to avoid cross-contamination.

Key Learning:
L5: To design a product label.
Component Knowledge:

- Measure and cut to fit specific dimensions.
- Design a label thinking about colours, ingredients and the contents of the jar.
- Evaluate a design against criteria.

Key Learning:
L6: To follow and make an adapted recipe.
Component Knowledge:

- Use a recipe to gather the correct quantities of ingredients.
- Select the right equipment for each preparation technique.
- Follow the recipe in sequence and with accuracy.
- Adapt the recipe where appropriate.