Design and Technology – Reviewed 2024

Shottermill Junior School

Curriculum Intent and Vision Statement:

Design and technology is an inspirational and practical subject. Using creativity and imagination, pupils at Shottermill Junior School will design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. Through the evaluation of past and present Design and Technology, they develop a critical understanding of its impact on daily life and the wider world.

- Where possible, Design and Technology has a cross-curricular focus. In Year 3, puppet making is linked to A Midsummer Night's Dream (English) and card making is linked to Christmas (RE). In Year 4, night lights are linked to the electrical circuits topic (Science). In Year 6, embroidery is linked to the WW2 topic (History) and their educational visit to Chessington World of Adventures (design a ride).
- As an International School, an opportunity to explore food from other countries is provided, which will help our children to develop understanding of other societies and cultures. Children make pizza in Year 3, a stir fry meal in Year 4, soup in Year 5 and bread in Year 6, all of these topics link to Healthy Eating.
- Children will be taught to understand and consider seasonality when choosing ingredients across all year groups as well as the impact of food miles and how historical events impact food availability.
- The topics taught will link directly to the National Curriculum Design and Technology Key Stage 2 programme of study but will also build on the knowledge, skills and learning experiences children have gained whilst at Shottermill Infant School.

Implementation of Design and Technology at our school:

Children are taught a minimum of 6 hours of DT each term, however for some practical topics, the lessons may be taught in a block over the course of a day and a half (or approximately 6 - 8 hours). This helps with use of shared resources or equipment across the school and ensures that time is not wasted in clearing up / packing away resources each lesson; we often invite parent volunteers in to assist with supporting children when working practically also.

The following educational trips and special activities will enhance the teaching and learning in this subject:

In Year 3, the children visit a pizza-making restaurant, to experience a 'hands on' pizzas making experience.
Children in Year 5 visit the supermarket to research soup.
In Year 6, the children visit Chessington World of Adventures theme park. This is the term during which they research, design and construct their own ride.

Scheme of work to be taught:

Over the course of Key Stage 2, children are taught to:

Design

• use research and develop design criteria to inform the design of innovative, functional, appealing products
• generate, develop, model and communicate their ideas through discussion and plans

Make

• select from and use a wider range of tools and equipment to perform practical tasks
• select from and use a wider range of materials and components

Evaluate

• investigate and analyse a range of existing products
• evaluate their ideas and products against their own design criteria

Technical knowledge

• apply their understanding of how to strengthen, stiffen and reinforce more complex structures

• understand and use mechanical systems in their products
• understand and use electrical systems in their products
understand and use coding in their products

Year 3

Levers and Linkages - Cards (Autumn Term)

- Use research of pop up books and levers. Develop design criteria to inform the design of a functional and appealing product that is fit for purpose.
- Children evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.
- Children will develop their fine motor skills using scissors and split pins.
- Children understand the function of a split pin to create a moving card.

Sewing - Finger Puppets (Spring Term)

- Pupils select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. They also consider their functional properties and aesthetic.
- Pupils then use these finger puppets to act out a Midsummer Night's Dream in English lessons.
- Children will develop the skills of sewing using running stitch and over stitch and as an extension, using more intricate stitches to add design features.

Cooking - Pizza (Summer Term)

- Pupils investigate and analyse a range of existing products and select appropriate ingredients according to a 'wish list' from their Year Two buddy, in order to create a pizza for their buddy and ease the buddy's transition to SJS.
- Children develop the skills of slicing, dicing, grating, weighing ingredients, kneading, flattening and shaping.

Year 4

Strengthening and Reinforcing - Desk Tidies (Autumn Term)

- Pupils will select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic.
- Children will measure accurately.
- They then learn how to stiffen the construction using cardboard layers.
- Children will make cylindrical tubes and make a stable connection to the base of the desk tidy.

Electrical systems and Woodwork - Night Lights (Spring Term)

- Children develop understanding of product design and design criteria to meet a brief / intended user.
- Children are introduced to a basic 'working drawing' and annotating details.
- Pupils develop the skills of measuring in mm, using G Clamps, saws and bench hooks to work with wood. Children to use a hammer and nail to secure two pieces of wood with accuracy.
- Children will be measuring with and ruler and marking with a set square to prepare them for secondary school. This will link to maths and mm/ cm conversion.
- Pupil learn to understand and use electrical systems with components in their products (e.g. switch, battery, bulb).

Cooking - Stir Fry (Summer Term)

- Pupils learn to select from and use a wider range of tools and equipment to create a healthy meal. Children peel, chop and select healthy food. They also learn about seasonality and the importance of limiting food miles.
- Children develop an understanding of different food types / groups (e.g. fats, protein, etc).
- Children learn how to use a vegetable peeler and knife safely and accurately. Children take their stir-fry home to cook with their family before an evaluation.

Year 5

Weather-proof Materials and Reinforcement - Shelters (Autumn Term)

- This is linked to den building in Year 4 and Stone Age settlements in Year 4.
- Pupils will investigate existing shelters to design their own shelter. Children investigate the properties of materials for durability and water-resistance.
- Pupils will use materials provided to their best use, to make a shelter which is stable, wind and waterproof, as well as reinforced well enough to hold 1kg in weight.
- The children learn about triangulation to reinforce a structure.
- Children will test and evaluate their own and others' work.

Cooking - Pumpkin Seeds (Autumn Term)

- This links to the Maya topic taught in autumn of Year 5.
- Children learn about food miles, the origin and health benefits of pumpkins.
- Children learn to make and roast their own pumpkin seeds.

Cooking - Soup (Spring Term)

- Children investigate current soup products whilst visiting a local supermarket and design their own appealing end product.
- Children revisit learning from Year 4 about healthy meals and compare the information on food labels in relation to nutritional content. They consider whether the cost of a product affects its nutritional value and the benefits of canned and fresh products.
- Children examine the ingredients to see if they indicate whether the food is ultra-processed. They consider allergies and intolerances.
- Children have further understanding of seasonality and food miles reinforced.
- Children refine their peeling / knife skills from Year 4 in order to prepare their own soup.

Cams - Moving Toy (Summer Term)

- Children understand and use mechanical systems in their products to create a functioning toy.
- Children learn about the use of cams, followers, stoppers, dowels and handles and select the most appropriate one for their design..
- Children revisit learning from Year 4 to create a 'working drawing' annotating the working parts of their moving toy design.
- Children will build on the skills of using saws, set squares, G Clamps and bench hooks.
- Children will be introduced to using glue guns safely to join materials securely.

Year 6

Cookery - Bread Making (Autumn Term)

- Pupils research, design and make aesthetically appealing and healthy bread.
- The children learn about the importance of kneading, rising and the importance of yeast to ensure this happens.
- The project is linked to the seasonality of wheat and the importance of food miles is reinforced. Children are expected to draw on previous learning across KS2.
- Pupils build on the research into packaging from year five and consider legal requirements on packaging.
- Availability of wheat is discussed with reference to world events.

Sewing - WW2 Mend and Make Do (Spring Term)

- To link with their WW2 topic in History, pupils make a teddy bear using scraps of old clothing and buttons. Pupils will master sewing on buttons as well as sewing a pattern inside out for a neater and more appealing finish.
- Children build on the running stitch skills introduced in year three. They then develop the skill of back stitch, cross stitch and are challenged to also learn blanket stitch.
- Children create a pattern / template to work from and secure a button with a cross stitch.

Coding - Design a Ride (Summer Term)

- Children use electrical systems (such as motors) to design a ride, linking to their trip to Chessington World of Adventures.
- Children build upon their knowledge of Crumble kits that they worked with in year five and expand this knowledge to create a fully functioning and pre-coded ride.
- Children will test and debug their code.
- Children learn how to code their rides to change direction, have start and stop traffic lights and make considered sounds. They choose which of these are relevant to their ride.
