



DESIGN AND TECHNOLOGY CURRICULUM

'Strive for perfection in everything you do. Take the best that exists and make it better. When it does not exist, design it.'
Sir Henry Royce

Design and Technology: Intent

Nascot Wood Junior School Design and Technology (DT) curriculum is designed to provide students with the foundational skills and knowledge needed to solve real-world problems, understand the design process, and develop practical skills using various materials and tools. The focus is on creativity, problem-solving, and making connections between the design process and the world around them.

Implementation:

1. **Introduction to the Design Process:** Students will learn and apply the basic design process—design, make, evaluate—to create their own projects. This process helps them understand how to approach problem-solving in a structured way.
2. **Skills Development with Tools and Materials:** Throughout the curriculum, students will gain hands-on experience with a variety of tools (scissors, glue, hammers) and materials (card, fabric, wood), developing practical skills in measuring, cutting, and assembling.
3. **Focus on Creativity and Problem-Solving:** Projects are designed to encourage creativity, such as building moving toys, designing simple structures, or making products from recycled materials, helping students to think critically and innovate.
4. **Sustainability and Environmental Impact:** The curriculum introduces students to the concept of sustainable design, where they learn about the environmental impact of materials and the importance of recycling and upcycling in the design process.
5. **Practical Application in Real-World Contexts:** Students will engage with real-world problems by designing products (e.g., toys, soft items, simple food dishes) that can be used or appreciated in daily life, reinforcing the relevance of design and technology to the world around them.



| Long term plan for lower Key Stage 2 modelling the key areas of Mechanisms and Moving Parts; Textiles and Fabric Work; and Food Technology. | | | |
|---|---|--------|--|
| LKS2 | Year 3 | Year 4 | Key learning areas & assessment: |
| Autumn | <p>Unit Focus: Understanding Mechanisms (e.g., Levers, Pulleys, and Gears)</p> <p>Skills:</p> <ul style="list-style-type: none"> o Understanding basic mechanisms and how they work. o Using simple materials (card, dowels, plastic, string) to create moving parts. o Safe use of cutting and joining tools (e.g., scissors, glue, brads). o Project: Build a Moving Toy or Simple Mechanism (e.g., a lever or pulley system for a moving toy) <p>Outcome: Design and make a toy that incorporates a simple mechanism to move. The focus is on functionality and creativity in movement.</p> <p>Assessment:</p> <ul style="list-style-type: none"> o Demonstration of the functioning mechanism. o Ability to explain how their mechanism works. o Evaluation of the project's effectiveness in achieving the desired movement. | | <p>Key Learning Areas:</p> <ul style="list-style-type: none"> • Introduction to mechanical design principles (movement, forces). • Working with basic tools (stapler, hole punch, etc.). • Experimenting with simple mechanisms and testing them in practical ways. • Textile properties and selection. • Basic construction methods for soft toys. • Understanding of textiles in relation to their uses in everyday life. • Safe food handling practices (washing hands, avoiding cross-contamination). • Understanding ingredients and their nutritional value. • Simple cooking techniques (stirring, chopping, assembling). <p>Assessment and Reflection:</p> <ul style="list-style-type: none"> • Formative Assessment: Ongoing throughout the projects with feedback given on skills, creativity, safety, and understanding of the design process. • Summative Assessment: At the end of each term, students submit their finished projects with a short evaluation. This includes what worked, what didn't, and what they would change next time. • Peer Review: Encourage students to evaluate each other's projects, which helps develop communication and critical thinking skills. <p>By the end of LKS2 children should be able to:</p> <ul style="list-style-type: none"> • Develop an understanding of design principles (function, form, and aesthetics). • Learn and practice using different tools and materials safely. • Develop skills in measuring, cutting, joining, and assembling materials. • Apply the design process to solve real-world problems. • Understand the importance of evaluating products and improving designs. • Explore sustainable design and understand the impact of materials and processes on the environment. • Develop creative and critical thinking skills through project work. |
| Spring | <p>Unit Focus: Introduction to Textiles – Sewing and Basic Construction</p> <p>Skills:</p> <ul style="list-style-type: none"> o Basic hand-sewing techniques (running stitch, whip stitch). o Use of fabric, felt, and other textiles. o Creating patterns and templates. o Safe use of needles, pins, and scissors. <p>Outcome: A hands-on project that introduces students to the principles of sewing and creating functional items from fabric.</p> <p>Assessment:</p> <ul style="list-style-type: none"> o Basic stitching quality. o Creativity in design and functionality of the textile item. o Ability to follow a sewing pattern. | | |
| Summer | <p>Unit Focus: Simple Food Preparation and Nutrition</p> <p>Skills:</p> <ul style="list-style-type: none"> o Safe food handling and hygiene practices. o Basic kitchen skills: measuring, mixing, stirring, cutting (using safety knives). o Introduction to healthy eating principles and dietary choices. • Project: Make a Simple Dish which each group will complete. <p>Outcome: Focus on practical cooking skills and understanding healthy food choices.</p> <p>Assessment:</p> <ul style="list-style-type: none"> o Ability to follow recipes and use kitchen tools safely. o Understanding the principles of healthy eating. o Creativity in food presentation. | | |

Long term plan for upper Key Stage 2 modelling the key areas of: Construction and Structures; Textiles and Fabric Work; and Food Technology.

| UKS2 | Year 5 | Year 6 | Key Learning areas & Assessment |
|--------|--|--------|--|
| Autumn | <p>Unit Focus: Exploring Construction Materials and Building Structures</p> <p>Skills:</p> <ul style="list-style-type: none"> o Using construction materials such as wood, cardboard, and plastic. o Understanding basic structural principles (strength, stability, balance). o Safe use of tools: hammers, nails, and glue guns. • Project: Build a Simple Structure (e.g., a bridge, tower, or small house) <p>Outcome: Students design and build a small, stable structure using various materials. Focus on understanding how shapes and materials contribute to strength and stability.</p> <p>Assessment:</p> <ul style="list-style-type: none"> o Stability and functionality of the structure. o Reflection on the design process (What worked? What didn't?). o Collaboration and problem-solving in groups. | | <p>Key Learning Areas:</p> <ul style="list-style-type: none"> • Materials and their properties in construction. • Introduction to forces and stability. • Working in teams to design and create • Textile properties and selection. • Construction methods for useful objects. • Understanding of textiles in relation to their uses in everyday life. • Safe food handling practices (washing hands, avoiding cross-contamination). • Understanding ingredients and their nutritional value. • Mastery of cooking techniques (stirring, chopping, assembling). <p>By the end of UKS2 children should be able to:</p> <p>Apply Advanced Design Principles (Function, Form, Aesthetics)</p> <ul style="list-style-type: none"> • Independently apply principles of function, form, and aesthetics to create products that are not only fit for purpose but also user-focused and appealing. • Justify design decisions with reference to user needs and design criteria. <p>Use a Range of Tools and Materials Safely and Accurately</p> <ul style="list-style-type: none"> • Confidently and independently use a wide range of tools and materials with precision and control, adapting techniques as needed. • Assess and manage risks when selecting tools or materials for specific tasks. <p>Lead the Full Design–Make–Evaluate Process</p> <ul style="list-style-type: none"> • Plan, manage, and reflect on a full project independently, using detailed annotated sketches, prototypes, models, and step-by-step plans. • Tackle open-ended, real-world design problems with increasing autonomy and confidence. <p>Demonstrate Advanced Creativity and Problem-Solving</p> <ul style="list-style-type: none"> • Use a wide range of creative strategies to generate, test, and refine ideas, showing perseverance through challenges. • Collaborate effectively, share and respond to feedback, and present final products with confidence and clarity. |
| Spring | <p>Unit Focus: Introduction to Textiles – Sewing and Construction</p> <p>Skills:</p> <ul style="list-style-type: none"> o Hand-sewing techniques (running stitch, whip stitch). o Use of fabric, felt, and other textiles. o Creating patterns and templates. o Safe use of needles, pins, and scissors. <p>Outcome: A hands-on project where students use the principles of sewing to creating functional items.</p> <p>Assessment:</p> <ul style="list-style-type: none"> o Stitching quality. o Creativity in design and functionality of the textile item. o Ability to follow a sewing pattern. | | |
| Summer | <p>Unit Focus: Simple Food Preparation and Nutrition</p> <p>Skills:</p> <ul style="list-style-type: none"> o Safe food handling and hygiene practices. o Kitchen skills: measuring, mixing, stirring, cutting (using safety knives). o Consideration of healthy eating principles and dietary choices. • Project: Make a Simple Dish which each group will complete. <p>Outcome: Focus on practical cooking skills and understanding healthy food choices.</p> <p>Assessment:</p> <ul style="list-style-type: none"> o Ability to follow recipes and use kitchen tools safely. o Understanding the principles of healthy eating. o Creativity in food presentation. | | |

| Whole School D&T Progression Map | | |
|----------------------------------|-------------------------------------|--|
| | Lower Key Stage 2 | Upper Key Stage 2 |
| | Pupils should be able to... | |
| Designing | Generate Ideas through discussion. | Use research to develop design criteria. |
| Making | Use tools safely under supervision. | Select and use appropriate tools independently. |
| Evaluating | Discuss how well a product works. | Critically evaluate ideas and suggest improvements. |
| Technical Knowledge | Explore simple mechanisms. | Apply understanding of complex systems (e.g. cams, circuits) |
| Cooking and Nutrition | Understand healthy eating | Prepare savoury dishes using a range of techniques. |

Additional Workshop: Sustainable Design

Unit Focus: Introduction to Sustainable Practices in Design

Skills:

- o Understanding the environmental impact of design and materials.
- o Learning about recycling and upcycling materials.
- o Designing with sustainability in mind.
- Project: Upcycled Product (e.g., a bag made from old fabric, or a pencil holder from recycled materials)

Outcome: Students create a product using only recycled or repurposed materials, understanding the importance of sustainability in design.

- Assessment:
- o Creativity in using recycled materials.
- o Reflection on the environmental impact of materials and design choices.
- o Quality and functionality of the upcycled product.

Key Learning Areas:

- Introduction to sustainability in design.
- Creative thinking and problem-solving in upcycling.
- Understanding the lifecycle of materials.

Resources and Materials

- Basic Tools: Scissors, glue, tape, rulers, pencils, craft knives, hole punch, staplers.
- Materials: Paper, card, fabric, plastic, wood (or dowels), string, felt, buttons, sewing needles.
- Safety Equipment: First-aid kits, safety goggles, gloves (for handling some tools).
- Books: Design and technology textbooks, project guides, sustainability resources.

Cross-Curricular Links

- Math: Measuring, calculating dimensions, symmetry.
- Science: Properties of materials, forces (in mechanisms and construction).
- Art: Sketching, visual design, aesthetics in project work.
- Geography: Sustainability and environmental impact.

This curriculum plan is designed to be adaptable based on available resources, student abilities, and interests. It fosters creativity, problem-solving, and practical skills while introducing students to the concepts of sustainable and ethical design.