DESIGN & TECHNOLOGY : CURRICULUM OVERVIEW & SKILLS PROGRESSION 2021-2022

CURRICULUM OVERVIEW

National Curriculum Focus

Purpose of Study	Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. 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. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.
Aims	Pupils should be taught to: • Develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world • Build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users • Critique, evaluate and test their ideas and products and the work of others • Understand and apply the principles of nutrition and learn how to cook.

Key Stage One

Design & Make

Pupils should be taught:

- **Design:** design purposeful, functional, appealing products for themselves and other users based on design criteria, generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology
- **Make;** select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics
- **Evaluate;** explore and evaluate a range of existing products, evaluate their ideas and products against design criteria
- **Technical knowledge:** build structures, exploring how they can be made stronger, stiffer and more stable, explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.

Key Stage One – Cooking & Nutrition

Pupils should be taught:

- use the basic principles of a healthy and varied diet to prepare dishes
- understand where food comes from

Cultural Capital inc visits and visitors

Year 1 Design & Make: Toy Museum; Science and Industry Museum

Connected Curriculum

Year 1 Design & Make: Links with History
Year 1 & 2 Cooking & Nutrition: Links with Science

Key Stage Two

Design & Make

Pupils should be taught:

- **Design:** 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
- **Make:** select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately, select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities
- **Evaluate:** 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, understand how key events and individuals in design and technology have helped shape the world
- **Technical knowledge:** 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], understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors], apply their understanding of computing to program, monitor and control their products.

Cooking & Nutrition

Pupils should be taught:

- Understand and apply the principles of a healthy and varied diet
- Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques
- Understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed.

Cultural Capital including visits and visitors

Year 3 Design & Make: Science and Industry Museum

Year 4 Design & Make: Bright Sparks
Year 6 Design & Make: Bright Sparks
Year 4 Cooking & Nutrition: Food Technology Visit (Local High School)
Year 6 Cooking & Nutrition: Food Technology Visit (Local High School)

Connected Curriculum

Year 4 Design & Make: Links with Science Electricity
Year 6 Design & Make: Links with Science Electricity

SKILLS PROGRESSION

Design

Key Stage 1

Year 1	Year 2
• Use pictures and words to convey what they want to design / make • Explore ideas by rearranging materials • Select pictures to help develop ideas • Use mock-ups e.g., recycled material trial models to try out their ideas	• Propose more than one idea for their product • Use ICT to communicate ideas • Use drawings to record ideas as they are developed • Add notes to drawings to help explanations

Key Stage 2

Year 3	Year 4	Year 5	Year 6
• Develop more than one design or adaptation of an initial design. • Plan a sequence of actions to make a product • Think ahead about the order of their work and decide upon tools and materials • Propose realistic suggestions as to how they can achieve their design ideas	• Record the plan by drawing using annotated sketches • Use prototypes to develop and share ideas • Consider aesthetic qualities of materials chosen • Use CAD where appropriate	• Record ideas using annotated diagrams • Use models, kits and drawings to help formulate design ideas • Sketch and model alternative ideas • Decide which design idea to develop	• Plan the sequence of work • Devise step by step plans which can be read / followed by someone else • Use exploded diagrams and cross-sectional diagrams to communicate ideas

Make			
Key Stage 1			
Year 1		**Year 2**	
• Select materials from a limited range • Explain what they are making • Name the tools they are using		• Discuss their work as it progresses • Select and name the tools needed to work the materials • Explain which materials they are using and why	
Key Stage 2			
Year 3	**Year 4**	**Year 5**	**Year 6**
• Select from a range of tools for cutting, shaping, joining and finishing • Use tools with accuracy • Select from materials according to their functional property • Use appropriate finishing techniques	• Prepare pattern pieces as templates for their design • Select from techniques for different parts of the process	• Develop one idea in depth • Select from and use a wide range of tools • Cut accurately and safely to a marked line • Select from and use a wide range of materials	• Make prototypes • Use researched information to inform decisions • Produce detailed lists of ingredients / components / materials and tools • Refine their product – review and rework / improve

Evaluate			
Key Stage 1			
Year 1		**Year 2**	
• Explore existing products and investigate how they have been made (including teacher-made examples) • Talk about their design as they develop and identify good and bad points • Say what they like and do not like about items they have made and attempt to say why		• Decide how existing products do / do not achieve their purpose • Discuss how closely their finished product meets their own design criteria	
Key Stage 2			
Year 3	**Year 4**	**Year 5**	**Year 6**

• Investigate similar products to the one to be made to give starting points for a design • Research needs of user • Decide which design idea to develop • Consider and explain how the finished product could be improved • Discuss how well the finished product meets the user's design criteria • Investigate key events and individuals in design and technology	• Draw / sketch existing products in order to analyse and understand how products are made • Identify the strengths and weaknesses of their design ideas in relation to purpose / user • Consider and explain how the finished product could be improved • Investigate key events and individuals in design and technology	• Research and evaluate existing products • Consider user and purpose • Consider and explain how the finished product could be improved related to design criteria • Investigate key events and individuals in design and technology	• Identify the strengths and weaknesses of their design ideas • Report using correct technical vocabulary • Discuss how well the finished product meets the design criteria having tested on/discussed outcomes with the user • Understand how key people have influenced design in a variety of contexts • Investigate key events and individuals in design and technology

Technical Knowledge			
Key Stage 1			
Year 1 and Year 2			
• Start to use technical vocabulary • Cut out shapes which have been created by drawing round a template • Join materials in a variety of ways • Decorate using a variety of techniques • Know some ways of making structures stronger		• Show how to stiffen some materials • Know how to make simple structures more stable • Attach wheels to a chassis using an axle • Know some different ways of making things move in a 2-D plane	
Key Stage 2			
Year 3	**Year 4**	**Year 5**	**Year 6**
• Use an increasingly appropriate technical vocabulary for tools materials and their properties • Understand seam allowance • Prototype a product • Sew on buttons and make loops. Strengthen frames with diagonal struts • Measure and mark square section, strip and dowel accurately to 1cm • Incorporate a circuit into a model. Use electrical systems such as • switches bulbs and buzzers		• Use the correct vocabulary appropriate to the project • Join materials using appropriate methods • Create 3D textile products using pattern pieces • Understand pattern layout with textiles • Cut strip wood, dowel, square section wood accurately to 1mm • Build frameworks to support mechanisms • Stiffen and reinforce complex structures • Use mechanical systems such as cams, pulleys and gears	

• Use ICT to control products • Use linkages to make movement larger or more varied	• Use electrical systems such as motors and switches • Program, monitor and control using ICT

Cooking and Nutrition			
Key Stage 1			
Year 1		**Year 2**	
• Group familiar food products e.g., fruit and vegetables • Cut and chop a range of ingredients • Work safely and hygienically • Know about the need for a variety of foods in a diet		• Cut, peel, grate, chop a range of ingredients • Work safely and hygienically • Know about the Eatwell Plate • Understand where food comes from	
Key Stage 2			
Year 3	**Year 4**	**Year 5**	**Year 6**
• Follow instructions / recipes • Join and combine a range of ingredients • Begin to understand the food groups on the eat well plate	• Make healthy eating choices – use the Eatwell plate • Understand seasonality • Know where and how ingredients are reared and caught • Prepare and cook using different cooking techniques	• Join and combine a widening range of ingredients • Select and prepare foods for a particular purpose • Know where and how ingredients are grown and processed	• Understand and apply the principles of a healthy and varied diet • Choose ingredients to support healthy eating choices when designing their food products • Prepare and cook a variety of mostly savoury dishes using a range of cooking techniques

Links to EYFS – Educational Programme for Arts and Expressive Design
The development of children's artistic and cultural awareness supports their imagination and creativity. It is important that children have regular opportunities to engage with the arts, enabling them to explore and play with a wide range of media and materials. The quality and variety of what children see, hear and participate in is crucial for developing their understanding, self-expression, vocabulary and ability to communicate through the arts. The frequency, repetition and depth of their experiences are fundamental to their progress in interpreting and appreciating what they hear, respond to and observe.

DT				
0-3 years of age	**3-4 Years of age**	**Reception Children**	**ELG**	**Key Vocabulary**
• Manipulate and play with • different materials. • Use their imagination as they consider what they can do with different materials. • Make simple models which express their ideas. • Start to develop pretend play, pretending that one object represents another. For example, a child holds a wooden block to her ear and pretends it's a phone	• Begin to develop complex stories using small world equipment like animal sets, dolls and dolls houses, etc. • Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park. • Take part in simple pretend play, using an object to represent something else even though they are not similar. • Explore different materials freely, to develop their ideas about how to use them and what to make. • Develop their own ideas and then decide which materials to use to express them. Join different materials and explore different textures.	• Explore, use and refine a variety of artistic effects to express their ideas and feelings. • Return to and build on their previous learning, refining ideas and developing their ability to represent them. • Create collaboratively, sharing ideas, resources and skills.	• Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. • Share their creations, explaining the process they have used. • Make use of props and materials when role playing characters in narratives and stories.	design, plan, model, make, build, construct **COEL Links** Showing a curiosity about objects, events and people Finding ways to solve problems Making links and noticing patterns in their experience Making predictions Developing ideas of grouping, sequences cause and effect