# SUBJECT: DESIGN TECHNOLOGY

## Year 8

### What are the aims and intentions of this curriculum?

The aim of our Key Stage 3 Curriculum is to provide all children with the skills and knowledge that will prepare them for life beyond secondary education. We encourage children to use their creativity and imagination, to design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. Design Technology is an inspiring, rigorous and practical subject. It can be found in many of the object's children use each day and is a part of children's immediate experiences. Design Technology encourages children to learn to think and intervene creatively to solve problems both as individuals and as members of a team and help develop their perseverance and resilience.

Our Design Technology curriculum combines skills, knowledge, concepts and values to enable children to tackle real problems. It can improve analysis, problem solving, and practical capability and evaluation skills. We aim to, wherever possible, link work to other disciplines such as mathematics, science, engineering, ICT and art. The children are encouraged to become innovators and risk-takers.

Highlighted in green are links to PSHE in the curriculum
Highlighted in blue are links to Careers in the curriculum

| Term | Topics | Knowledge and key terms | Skills developed | Assessment |
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| Autumn 1 | Introduce pupils to health and safety in the workshop. Go through project booklets, design process and level descriptors.<br><br>To demonstrate the safe use of different hand tools and equipment to manufacture their product. (board game)<br><br>Explain the differences between safe practice in classroom and industrial environments.<br><br>Introduction to the Design Challenge. Key skills: Explain the strengths and weaknesses of Research existing products using ACCESS FM.<br><br>Using the research create a detailed specification. To use 2D | 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.<br><br>Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.<br><br>To understand the project design brief. To investigate existing products and analyze them using ACCESS FM.<br><br>To demonstrate creativity in writing a detailed specification.<br><br>To understand the importance of creating a prototype. | Use the research from the previous lesson to help inform and develop potential ideas for the specification.<br>Write a 5-point specification for their own design.<br>Begin to sketch ideas by hand or on CAD. Colour and annotate.<br><br>Continue to complete hand drawn version of designs ideas And / Or use Tech Soft 2D templates to help develop ideas.<br><br>Cut and construct prototypes using the laser cutter or hand tools. Evaluate prototype design. Identify any improvements.<br><br>Use Tech Soft 2D to complete final design work. Cut designs using either the laser cutter or hand tools. Begin to construction. Write up manufacturing diary. | Students' work will be judged on a variety of success criteria including www/ebi after specifications.<br><br>Peer Assessment.<br><br>Summative assessment.<br><br>Questioning and presentations |

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| | Tech-soft to create a CAD model of your design. Key skills: Create a detailed justified list of features for an idea.<br><br>Design development through sketches / digital modelling.<br><br>Develop design work using prototypes.<br><br>Write an evaluation and reflect on the specification points.<br>. | Using Tech-Soft 2d Design Tools software, demonstrate how to present final design using CAD. | Complete practical work. Complete the evaluation against the specification and peer assess the final piece.<br>Online and media<br> The impact of viewing harmful content when conducting research.<br><br>Families<br><br>Students will design and manufacture their board games taking in consideration that these can be use in bringing families together. Games are designed to be portable with a detached electronic mouse that can be a good source of entertainment on family road trips and family day out.<br><br>Linking curriculum learning to careers<br><br>Students will know that they can become a successful board game designer.<br><br>On average, board game designers make between £56,000-£113,000 a year. A board game designer with less than 1year experience makes between £42,000-£87,000. With 7-14 years' experience, a board game designer can expect to earn between £51,000-£113,000. | |
| Autumn 2 | Manufacturing of the electronic dice.<br><br>Selecting appropriate tools, equipment and processes.<br><br>Accuracy in design and manufacture.<br><br>To know the different circuit symbols. | Understand and be able to identify the correct tools and equipment for a specific task.<br><br>Accuracy in design and manufacture.<br><br>Be aware of the importance of accuracy in manufacture.<br><br>Understand how to eliminate errors.<br><br>Be aware of and be able to demonstrate how to plan for accuracy and efficiency. | Basic first aid and Health and Prevention<br><br>Student will understand the basic procedure if they sustain cuts and burns from tools and soldering iron.<br><br>They will carry out risk assessment and teacher will demonstrate the use of all tools, equipment and machines. Students will also know the procedure to be taken in the event of accidents. All students will be thoroughly assessed and given a certificate before they are allowed to use the machines. | |

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| | To be able to build circuits from their circuit diagrams. | | | |
| **Spring 1** | Interpret the situation and design brief.

Explain the problem and make suggestions of how you would solve the design problem.

Analyse the task by brainstorming the key factors related to designing and making a **wall décor** product.

Demonstrate understanding of advanced techniques used to make their wall décor.

Explore the resistant material that will be used in order to discuss the materials used, their characteristics and the techniques that would be appropriate to work them safely.

Develop ideas through detail sketches using colours and annotations.

Manufacture of design using the hand tools and equipment.

Write an evaluation and reflect on the specification points. | 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.

Develop the creative, technical and practical expertise needed to perform everyday tasks confidently and participate successfully increasingly in a technological world.

Research existing products using ACCESS FM.

Students will use their creativity and imagination, to design, make and evaluate products that solve real and relevant problems within a variety of contexts, considering their own needs, wants and values and those of others. | Learners are given real life scenarios as design or engineering problems to solve.

Cultural diversity and British values are included in the curriculum for enrichment and depth.

Projects and assignment briefs require learners to be creative and innovative in solving problems.

Diversity, tolerance and individuality is celebrated and embraced through an inclusive environment and ethos within the school.

==Understand and respectful relationships, including friendships.==

Students will know the characteristics of positive and healthy friendships in all contexts including online. They will respect each other when working in groups and doing peer assessments. Students will show solidarity, honesty, generosity and respect to other cultures when doing their designs.

They will not discriminate against others and always respect others' boundaries and decisions. | Students' work will be judged on a variety of success criteria including www/ebi after specifications.

Peer Assessment.

Teacher assessment

Questioning and presentations |
| **Spring 2** | Introduction to the steady hand game and its components.

Introduce ECT (Electronic Communications Technology) | Explain and discuss the concept of the specification in the design process. Pupils will develop a specification for the project using the 'Developing a Specification' sheet. | Interpreting 'The Design Brief' sheet. Discuss the design situation and give an example of the brief pupils could use. Pupils will present a Situation and Design Brief for the project in their booklets. | Students' work will be judged on a variety of success criteria including www/ebi after specifications. |

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| | by discussing applications of electronics in our society today. Discuss the project and demonstrate how to build their steady hand game.<br><br>Design development of ideas through spider diagrams & sketches.<br><br>Manufacture of design using the hand tools and equipment.<br><br>Write an evaluation and reflect on the specification points. | Research existing products using ACCESS FM.<br><br>Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] | <mark>Understand and respectful relationships, including friendships.</mark><br><br>The legal rights and responsibilities regarding equality will be reinforced with reference to the protected characteristics as defined in the Equality Act 2010 that everyone is equal and unique. Students must consider that not all their peers will be able to tolerate the noise from their steady hand game and must be mindful when testing them. | Peer Assessment.<br><br>Teacher assessment<br><br>Questioning and presentations |
| **Summer 1** | Children will designing their own article of clothing.<br><br>Understand the process of designing a piece of clothing.<br><br>Produce a detailed specification for the product.<br><br>Communicate alternative ideas using words, labeled sketches and models, showing that they are aware of constraints.<br><br>Use some ideas from others' designing to inform their own work.<br><br>Evaluating customer requirements by development through spider diagrams and peer assessments. | Select from and use a wider range of materials and components, including vinyl materials and textiles, according to their functional properties and aesthetic qualities.<br><br>Research existing designs using ACCESS FM.<br><br>Discuss the design situation and give an example of the brief pupils could use. Pupils will present a Situation and Design Brief for the project.<br><br>Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. | Briefly explain the process of operating the vinyl cutter.<br><br>Tasks and assignment briefs will instill resilience in learners whether working individually or as part of a team.<br><br><mark>Linking curriculum learning to careers</mark><br><br><mark>Training or possible apprenticeships considered for (18 to 22 years old) in Digital Garment decoration.</mark><br>Daily tasks include :<br>• Preparing artwork for our large format print<br>• Weeding vinyl<br>• Using a vinyl cutter and preparing artwork for vinyl cutting<br>• Colour separations for screen printing<br>• Using a Heat Press and Roland and Epson wide-format printers | |

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| | Transfer of designs to shirt.<br><br>Write an evaluation and reflect on the specification points. | | <mark>Understand and respectful relationships, including friendships.</mark><br><br>Students will understand that stereotype based on disability, religion, sexual orientation or race can cause damage when evaluating their products based on the views of others.<br><br>Students will also be encouraged to be honest, respectful and kind when doing peer assessments. | |
| **Summer 2** | Introduction to the **bird house project.**<br><br>Design development through spider diagrams & sketches.<br><br>Design development through sketches / digital modelling. Produce a specification based on research and design work.<br><br>Final Design using CAD CAM.<br><br>Write an evaluation and reflect on the specification points. | To know how to research and use the information to support design development.<br><br>To create and use a spider diagram to develop design ideas.<br><br>To use the research to create and develop design ideas.<br><br>To evidence through photos and notes how the bird house was manufactured.<br><br>To be able to evaluate the completed product and collect feedback from peers. | Complete research using the internet guided by ACCESS FM.<br><br>Individual designs will be produced allowing teacher support and stretch for more able students.<br><br>Sketch ideas by hand. Colour, annotate and label.<br><br>Use Tech soft 2D templates to help develop ideas.<br><br>Write a 5 point specification for their own design.<br><br><mark>Linking curriculum learning to careers</mark><br><br><mark>Students will understand that providing solutions to different engineering briefs will be of great help in the future. They can be a Design and Development Engineer and use their skills to improve product performance and efficiency while researching and developing new manufacturing ideas.</mark> | Students' work will be judged on a variety of success criteria including www/ebi after specifications.<br><br>Individual photographs will be taken to form a diary of manufacturing progress. Individual skills can be assessed.<br><br>Peer assessments.<br><br>Presentations of their finished products. |

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| | | | **Mental Health and Well being**<br> Students are encourage to express themselves through their creativity and designs. Design tasks can create a calm and serene environment conducive to learning. Students who do not feel comfortable in talking about their emotions can do so through designs.<br>Design will develop their creativity and help them express themselves which provides a variety of potential solutions and embracing experimentation. This will also assists the teachers and school to find fresh and unusual solutions to complicated challenges. | |