Curriculum Mapping: Design & Technology -Year 7-9

We have designed our Design and Technology curriculum to cover the wide and diverse aspects of our subject in a sequenced learning journey that builds upon prior knowledge whilst introducing new concepts. Our core key areas of design, nutrition, material/ingredient knowledge, practical skills, and evaluation feature throughout the three years. Year 7 & 8 pupils study DT via a carousel of 4 subject areas rotate approximately every 14 lessons, whilst year 9 focus on 3 subject areas rotating each term. Pupils will develop their Health & Safety knowledge alongside their learning and will have an additional 3 lesson topic each year to learn additional core topics which include drawing skills, sustainability and careers within DT.

Year 7 - Design & Technology

Core Skills	Food & Nutrition	DT – CAD	DT – Product Design	Textiles
3D Drawing	**Diet & Nutrition**	**Designing with Computers**	**Graphic Communication**	**Sensory Toy**
Concepts/Tier 3 vocabulary ***Isometric drawing, crating, rendering,***	***Concepts/Tier 3 vocabulary*** ***Food safety and good hygiene, Eatwell guide, fruit and vegetable, dairy and alternatives, carbohydrates, protein, takeaway foods and their impact on the body, and evaluating dishes, pizza toast, pasta salad, carrot cakes, scones, chicken stir fry and lamb koftas***	***Concepts/Tier 3 vocabulary*** ***Computer aided design, computer aided manufacture, virtual modelling, programming. 2D Design, Tinkercad, BBC Microbit, powerpoint. Vectorising, 2D, 3D, cutting path, bitmap, dimensioning, command, digital.***	***Concepts/Tier 3 vocabulary*** ***Graphics, visual communication, packaging, nets, promote, protect, inform, card, scoring, craft knife, medium density fibreboard (MDF), high impact polystyrene (HIPS), vacuum forming, scroll saw, sand paper, PVA glue, isometric drawing, design ideas specification.***	***Concepts/Tier 3 vocabulary*** ***Natural fibres, cotton, silk, wool, product analysis, soldering, solder, , cell holder, circuit board, LED, resistor, design ideas, annotation, final design, pattern, stitching, sewing thread, needle, pins, embroidery, iron, fleece, fur, felt.***
Justification: Pupils develop their skills when drawing in 3D using isometric and crating techniques. This will act as a recap on skills already learnt and build upon them to support future lessons in DT producing design ideas. A baseline test will follow to assess skills learnt.	***Justification:*** Pupils develop their practical making skills through the preparation and cooking of *pizza toast, pasta salad, carrot cakes, scones, chicken stir fry and lamb koftas.* Pupils will gain knowledge of food safety and hygiene practices in a kitchen, nutritional value, classification and sources of food types, focusing on fruit and vegetables. Pupils will apply this knowledge in practical lessons. The theory will be reinforced with practical lesson	***Justification:*** Pupils develop their IT and designing skills using: 2D Design, Tinkercad and Microbit. Pupils will gain knowledge of how computers are used to design products. A series of exercises will take pupils through the various software tools looking at dimensioning, vectorising, and adding fills in 2D Design. Producing 3D objects in Tinkercad as virtual models and using programming commands to operate a Microbit processor. This will give pupils access to modern approaches to design and prepare them for GCSE and A Level.	***Justification:*** Pupils develop their practical making skills through the production of a card net with a craft knife and drawn graphics, MDF mould using drills and scroll saws and HIPs chocolate mould using the vacuum former. They will use isometric drawing to produce their mould designs. Pupils will gain knowledge of the use of graphics on packaging, working properties of MDF and HIPs so that they can apply these practices to their future designs.	***Justification:*** Pupils develop their practical making skills through the production of a Sensory toy for a small child made from a variety of fabrics, embellished with details such as textured fabrics and LEDs. They will learn about creating a LED circuit and use soldering irons to make one for their product. They will use pattern making to plan out their sensory toy before stitching it together. Pupils will gain knowledge of designing a specific product, natural fibres in textiles and product analysis. This gives pupils access to the fundamental skills that will be built on in future years.
Assessment: *Pupils are assessed at the end of each rotation on their making and designing skills and given a grade. Grades for each rotation are tracked across the year and averaged to generate an overall progress grade for DT.*				

Wider reading/Cultural capital

We run a KS3 Food and Textiles club afterschool once a week for pupils to apply their skills further and produce a range of products outside of the curriculum. We endeavour to build in real life examples of topics/products to enable pupils to relate their learning to situations they understand using videos, pictures, and discussion. Pupils are encouraged to continue their understanding of why design matters via programmes such as: How stuff is made. Year 7 pupils are also invited to attend our annual summer exhibition to view the work of our GCSE and A-level pupils. ***Wider reading includes:*** *https://www.technologystudent.com/designpro/drawdex.htm#google_vignette, KS3 D&T Dictionary – Peter Bull - 50 Trade Secrets of Great Design Packaging by Stafford Cliff, How Technology Works by Dorling Kindersley, Exploring Food & Nutrition for KS3 by Bev Saunder and Yvonne Mackey - Hodder.*

Curriculum Mapping: Design & Technology -Year 8

St Martin's School
Be the best you can be

Year 8 - Design & Technology

Food & Nutrition	DT – Modelling	DT – Product Design	DT - Textiles	Core Skills
Diet & Nutrition	**Design in society**	**User centred design**	**Manufacturing**	**Global Challenges**
Concepts/Tier 3 vocabulary ***Carbohydrates, protein, fats and micronutrients, nutritional needs of a teenager, science of bread making, focaccia planning, food and the environment, evaluation of a dish. Egg fried rice, chicken fajitas, muffins, spaghetti Bolognese, focaccia bread, fish fingers.***	***Concepts/Tier 3 vocabulary*** ***Model making, accuracy, use of scale, complex nets, modelling materials, ratio, paper and board types, properties, material uses, paper and board unit measurements, prototype, millimeters, microns, grammes per square metre. Climate change, global warming, extreme weather events, users needs.***	***Concepts/Tier 3 vocabulary*** ***User centred design, project brief, product analysis, function, aesthetics, size, materials, environment. Needs and wants, specification, safety. Softwood, hardwood, manufactured wood, acrylic, strip heating finishes. Design ideas, modelling. Marking out, try square, tenon saw, coping saw, bench hook, pillar drill, plywood, evaluation.***	***Concepts/Tier 3 vocabulary*** ***Synthetic fibres, disassembly of a garment, sewing machine, presser foot, bobbin, needle, take up lever, selector buttons, seams, zigzag stitch, straight stitch, paper pattern, garment design, care labels, ironing.***	***Concepts/Tier 3 vocabulary*** ***Climate change, global warming, Teamwork, collaborative design, problem solving. Global challenges. Contextual design.***
Justification: Pupils develop their practical making skills through cooking a range of dishes: *Egg fried rice, chicken fajitas, muffins, spaghetti Bolognese, focaccia bread, fish fingers.* Pupils will gain knowledge in the types of nutrients in food reinforcing the Eatwell guide, hygiene when storing and cooking food, the impact of food on the environment. The theory will be reinforced with practical lessons. This gives pupils access to valuable life skills. .	***Justification:*** Pupils develop their practical making skills through the production of a scale model of a shelter made from card and paper-based materials with the emphasis on working accurately in millimetres using rulers and craft knives. Pupils will gain knowledge of the properties, uses and unit measurements of paper and board. They will also look at differing model making materials. Pupils will apply this knowledge to solve a design problem by designing a shelter for use in extreme weather events caused by global warming.	***Justification:*** Pupils develop their practical making skills through the production of a phone holder made from plywood, woods and acrylic using the scroll saws, drills, hand tools and marking out tools such as the try square. They will experience joining wood and adding finishes. Pupils will gain knowledge of designing for a specific user, product analysis, design ideas, design development, wood types, properties and uses, woodworking tools, strip heating and evaluating their own designs. This enables pupils to experience the whole design cycle process.	***Justification:*** Pupils develop their practical making skills through the production of a teenager's pair of pyjama shorts with an elastic waist sewn on the sewing machine. They will use given patterns to cut out their fabric to gain an understanding of how garments are constructed. Pupils will gain knowledge of synthetic fibres, via disassembly seam allowance, why garments need care labels, how a sewing machine works, is threaded, and used. This provides pupils with skills and knowledge to support their studies at GCSE and A Level.	***Justification:*** Pupils will work in teams to solve a global contextual challenge via the production of a concept prototype. Pupils develop and apply their making skills from previous projects across KS3 using the whole design process. Pupils will gain knowledge of our role as designers to produce products that can solve challenges faced by society through researching, designing, and developing design concepts. This will enable pupils to develop skills in inclusive, ethical, cultural, and environmental design.
Assessment: *Pupils are assessed at the end of each rotation on their making and designing skills and given a grade. Grades for each rotation are tracked across the year and averaged to generate an overall progress grade for DT.*				

Wider reading/Cultural capital

We run a KS3 Food and Textiles club afterschool once a week for pupils to apply their skills further and produce a range of products outside of the curriculum. We endeavour to build in real life examples of topics/products to enable pupils to relate their learning to situations they understand using videos, pictures, and discussion. Pupils are encouraged to continue their understanding of why design matters via programmes such as: Made in Britain and Big Life Fix. Year 7 pupils are also invited to attend our annual summer exhibition to view the work of our GCSE and A-level pupils. ***Wider reading includes****: The Elements of pop up by James Diaz, Restore by Will Kirk, My Sewing Machine by Jane Bull, The Design of Everyday Things by Donald A. Norman, Eatwell and Feel Great: The Teenagers Guide to Nutrition and Health by Tina Lond-Caulk*

Curriculum Mapping: Design & Technology -Year 9

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Year 9 – Design & Technology

Core Skills	Food	DT - Product Design	DT - Textiles
Careers	**World Foods**	**Manufacturing**	**Cultural Design**
Concepts/Tier 3 vocabulary ***Product Designer, Food Scientist, Chef, Graphic Designer, Architect, Games Designer, Fashion Designer, Textile design, Interior Designer, Stylist, Food Officer, Engineer, Costume designer, Construction manager***	***Concepts/Tier 3 vocabulary*** ***Different cuisines from around the world, gelatinisation, science of shortcrust, planning and evaluation. Pizza pinwheels, English breakfast, garlic bread, sweet and sour chicken, honey soy chicken, chocolate chip cookies, shortbread investigation, samosas, burgers.***	***Concepts/Tier 3 vocabulary*** ***Ferrous, non-ferrous, alloy, aluminium, pewter plywood. Draw and cross filing, countersink, casting, mould, laser cutting, vinyl cutting, vector, engrave. Wood polish, wet and dry paper, wire wool, needle file, hack saw. Abra saw, tenon saw, disc sander, CAD/CAM, pillar drill, application tape, squeegee, graphics, accuracy.***	***Concepts/Tier 3 vocabulary*** ***Design brief, design ideas, paper stencils, patterns and templates, felt, cultural design, batik, embroidery, printing, tie dye, applique, CAD/CAM, accuracy, seam allowance, inclusive design***
Justification: A short series of 3 lessons enabling pupils to understand the career opportunities liked to study in design and technology and how their learning developing their skills in these areas. Cross curricular skills will also be looked at and the nature of DT as a wider ranging subject developing skills for life.	***Justification:*** Pupils develop their practical making skills through a range of dishes exploring differing cooking methods and recipes from differing cultures and countries. Pupils will gain knowledge of the differing reasons behind food choices globally, gelatinisation, investigations into fat types, planning and evaluating dishes. Theoretical learning of topics will also be developed through practical lessons. This prepares pupils for further study in Food at GCSE and A Level.	***Justification:*** Pupils develop their practical making skills through the production of a plywood and aluminium key rack using hand tools, accurate shaping and appropriate finishes. They will learn techniques when working in metal such as draw and cross filing and finishing methods. Pupils will gain knowledge of the categories of metal, properties, and uses of aluminium and pewter so that they have now experienced all material areas. They will produce three key rings learning skills in pewter casting, laser and vinyl cutting, and the application of digital vector files. This is a multi-skill task enabling pupils to learn hand and computer making processes so that they can apply this knowledge and these skills at GCSE and A Level DT.	***Justification:*** Pupils develop their practical decorative and manufacturing skills through the production of a small cultural themed cushion. Pupils will gain knowledge of the application of a variety of decorative techniques for fabrics such as tie dye, batik and applique and finally manufacture an inclusive cushion using skills developed with the sewing machines inspired by a country previously selected. They will follow the design and development stages of the design process to reinforce this process and prepare them for GCSE and A Level Textiles.
Assessment *Pupils are assessed at the end of each rotation on their making and designing skills and given a grade. Grades for each rotation are tracked across the year and averaged to generate an overall progress grade for DT.*			
Wider reading/Cultural capital *We run a KS3 Food and Textiles club afterschool once a week for pupils to apply their skills further and produce a range of products outside of the curriculum. We endeavour to build in real life examples of topics/products to enable pupils to relate their learning to situations they understand using videos, pictures, and discussion. Pupils are encouraged to continue their understanding of why design matters via programmes such as: Made in Britain and Big Life Fix. Year 7 pupils are also invited to attend our annual summer exhibition to view the work of our GCSE and A-level pupils.* ***Wider reading includes*** *Lonely Planet World's Best Street Food mini by Food, Jony Ive: The Genius Behind Apple's Greatest Products – Leander Kahney, Making It: Manufacturing Techniques for Product Design – Chris Lefteri, The Fabric of Civilisation: How Textiles Made the World by Virginia Postrel.*			