Springwood High School Design and Technology Curriculum Plan

Our Vision:

To improve young people's practical skills and subject knowledge in Design, Textiles (fabric) R.M (wood, polymers, metals, circuits) and Graphics (paper and card). New and emerging technologies, Sustainability issues and many more D&T topics.

Design and Technology Programme of study key stage three national curriculums in England: National curriculum in England: design and technology programmes of study - GOV.UK (www.gov.uk).

Exam boards: KS4 – AQA Design & Technology https://www.aqa.org.uk/subjects/design-and-technology/gcse/design-and-technology-8552/specification-at-a-glance

Brief overview of topics, themes, skills or key questions for each term:

Key Stage 3

Why are we teaching a knowledge-rich curriculum; how is it different?

At Springwood High School Design and Technology is a practical and valuable subject giving pupils the opportunity to learn how to design and make new and exciting products exploring and learning about materials and their working properties. We believe learning to design and develop practical skills through our knowledge enriched curriculum is an important life skill preparing pupils to be able to be resourceful now and later in life by being able to use their practical skills in real life context; potential designer, consider design problems, testing, experimenting and making prototypes, career in industry or being resourceful and using their practical repair skills in the home. We also believe it is vitally important to combine these practical skills with detailed knowledge which enables the pupils to be considerate when selecting materials considering sustainable issues and the impact on the planet being not just as a designer but also as a consumer. Being creative, communicating their own ideas fluently and influenced by real life context challenges and the work of other artists/designers both Internationally and British as a starting point encourages pupils to embrace cultures and the work of others' developing analytical skills when using existing products as a starting point for problem solving. By providing pupils with traditional and innovative skills, techniques and processes in many exciting practical projects encourages independent skills, team work, taking risks and problem solving.

Why are we teaching this content, in this order?

Design and Technology is taught in a carefully sequenced manner, ensuring that pupils build expert practical and design skills alongside developing a detailed understanding of the wide range of materials considering sustainable issues alongside every practical project. In Year 7, 8 and 9 our lessons are planned around activities linked to the Six R's, sustainability, fast fashion and recycling – Year 7's will be off timetable for Super Learning Day promoting the importance of reducing the social footprint of materials used and the impact this has on the planet. Introducing the sustainable issues in lessons prepares the

Year 7's pupils for the day of being innovative designers, encouraging team work, problem solving and embracing the important message of using sustainable materials when being a designer in this fast-paced world of mass production/manufacturing.

How does our curriculum match the ambition of the National Curriculum?

In 2019 we introduced a redesigned knowledge-rich Design and Technology curriculum enabling all KS3 pupils to study D&T once a fortnight throughout the academic year. As set out in the National Curriculum, our KS3 curriculum balances practical skills in a range of materials and specialist techniques and processes, and the theory behind making good sustainable choices, to develop design or creative projects. Pupils will learn and understand where materials are sourced from and how to use them when designing new and innovative products for real life situations. They will problem solve, test and evaluate all work, refining their own ideas and making improvements.

How does the curriculum build on that from Key Stage 2?

Pupils will build upon their knowledge from KS2, increasing their variety of tools, techniques and materials that can be used to solve design problems. They will continue to improve their technical drawing skills, design sketched and begin to make high quality prototypes, ensuring their ideas are fit for purpose. Pupils will access and extend their understanding of new and emerging technologies through computer aided design and laser cutter.

By the end of Key Stage 3, what key knowledge should pupils need to remember and be able to apply in this subject?

Pupils will be aware of the various materials and tools, and how to safely use them, required to work in a variety of media. They will be able to complete a range of projects, from conception and design to the final product. Pupils will be able to problem solve real-life scenarios and formulate a design solution for a new and exciting product to make the users/client life easier to live with.

Throughout KS3 we have firmly embedded retrieval practice, using it as a springboard to embed and extend knowledge and understanding. We have knowledge organisers breaking down the D&T wide range of topics with dual coding of imagery to represent the key words and terminology making the content engaging, fun and educational. End of project evaluation sheets to help students to identify improvements and adaptations for practical work. The Department adheres to the model of presenting pupils with small amounts of new material and then assisting students as they practice this material (for example, leading on 'spot demonstrations' during a practical to reinforce the correct techniques) to avoid cognitive overload. Pupils take part in ongoing formative assessments (low stakes quizzing and verbal questioning) and summative assessments (end of topic tests) in line with the school policy.

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Year	Autumn One	Autumn Two	Spring One	Spring Two	Summer One	Summer Two
7	Introduction to Health & Safety in the D&T workshop! **Sustainable Issues:** 6R's and littering - Extended reading & writing activity: newspaper article highlighting the UK's environmental issues. **Develop Design & Drawing Skills:** Freehand sketching. Tonal shading and mark making.	**Develop Design & Drawing Skills:** 2D & 3D shapes. Isometric Drawings. **Graphics Project:** Introduction to Art Movements: Pop Art. Learn how to analyse artist and designers' work. Take inspiration and influences from other people's work. **Fonts Design & Typography** – learning about graphic design and the power of communication using style, lettering and imagery.	**Graphics Project:** Battery Tester Project: Learn about paper & boards, characteristics and their working functions. **Battery Tester Project:** Introduction to smart materials, characteristics and their working functions. **Iterative Design:** inspired by Pop Art and incorporating font/typography design. Prototyping: experimentation with colour, design and packaging. **Introduction Electronics:** Paper circuit boards.	**Timbers Project:** Learn about hard/softwoods and particle boards, characteristics and their working functions. Timber and surface finishes. **Design:** Promote love of reading! Taking inspirations from a much-loved character from a book or comic. Using this theme to inspire ideas for the timber bookend project.	**Timber Project:** Workshop, carpentry skills using a range of specialist tools and machinery – learning how to shape and construct timber joints using pine and manufactured boards. Respond to the design brief to promote love of reading: Bookends.	**Continuation: Timber Project:** Workshop, carpentry skills using a range of specialist tools and machinery – learning how to shape and construct wood joints using pine and manufactured boards. Respond to the design brief to promote love of reading: Bookends. **Surface Finishes:** Learn about timber finishes and how they protect and provide an aesthetically overall appearance to the finish of the final timber product.
	Theory: Reinforce H&S rules with a design task. **Design:** Learn about how to reduce materials use – environmental issues. Link to SLD: Sustainable Awareness Day. **Literacy skills:** extended writing task (links to English). **Design:** Creativity and design skills (links to Art). Develop technical drawing skills (links to Maths).	**Theory:** Subject knowledge and Maths terminology through creative tasks. **Design:** Develop creativity, measuring and design skills (links to Art, Maths and Graphic design).	**Theory:** Key words & terminology. Learning about new and emerging technologies (links to science). Continuation of sustainability issues – recycling batteries. **Design:** Develop creativity & drawing skills.	**Theory:** Reinforce subject knowledge through practical and design tasks. **Practical:** Use a range of skills, tools and machinery. **Design:** Creativity Skills.	**Theory:** Reinforce subject knowledge through practical and design tasks. **Practical:** Use a range of skills, tools and machinery. **Design:** Creativity Skills.	**Theory:** Reinforce subject knowledge through practical and design tasks. **Practical:** Use a range of skills, tools and machinery. **Design:** Creativity Skills.

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8	Health & Safety in the D&T workshop (prior knowledge of workshop tools & machinery) & Introduction to textiles tools and equipment. **Textiles:** Learn about natural and synthetic fibres, characteristics and their working functions. **Design:** Respond to the design brief to **promote love of reading: bookmarks.** **Research:** analysis of other designers' bookmark products, taking inspiration to influence own design concepts.	**Textiles Project:** Learn about textiles and fashion industry specialist techniques, skill and processes. Develop hand embroidery/appliques & embellishment skills - create textiles samples.	**Textiles Project:** **Templates:** Learn how to deconstruct a product and create and draft paper patterns. Final make: bookmark applying textiles skills and techniques.	**Polymers:** Workshop skills, experimenting with acrylic and high impact polystyrene (HIPs) Vacuum former. Learn about a range of polymers: thermoplastics and non, characteristic and their working functions. **Sustainable Issues:** Finite and non-finite materials and the impact on the planet – links to Year 7 SLD.	**Electronics: Steady hand game:** Circuit boards, electronic components and their functions. introducing printed circuit board (PCB) circuit board – progression from Year 7 paper circuit board: Battery Tester.	**Continuation Electronics & Polymers:** Steady hand game: Circuit boards, electronic components and soldering. De/reforming & shaping polymers for the base for the game – using a range workshop specialist tools and machinery.
	Theory: Reinforce H&S rules. **Design:** Develop creativity & drawing skills.	**Theory& Practical:** Reinforce subject knowledge through practical tasks.	**Theory & Practical:** Reinforce subject knowledge through practical tasks.	**Theory:** Reinforce subject knowledge through practical and written tasks. **Design:** Learn about environmental issues through a creative task.	**Theory & Practical:** Reinforce subject knowledge through practical and written tasks.	**Theory & Practical:** Reinforce subject knowledge through practical and written tasks.

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9	Health & Safety in the D&T workshop! Pillar Drill & machinery focus. **Sustainable Issues:** Introduction to Fast Fashion and Fairtrade. Extended reading & writing activity: newspaper article highlighting the UK's environmental issues. **Textiles:** Learn about natural and synthetic fibres, characteristics and their working functions.	**Art Movements**: William Morris and Art Nouveau Learn how to analyse artist and designers' work. Take inspiration and influences from other people's work **Mixed Media Project:** Timber deckchair with fabric embellished seat cover. **Textiles:** Learn about textiles and fashion industry specialist techniques, skill and processes. Develop hand embroidery/appliques & embellishment skills - create textiles samples.	**Mixed Media Project:** Responding to a design brief: Inspired by the artist research - design and combine textile finish: fabric paints, and hand embroidery and embellish the fabric deckchair seat.	**Continuation Mixed Media Project:** Developing and using a range of specialist textiles and timber techniques, skills and processes. Workshop, carpentry skills using a range of specialist tools and machinery to make and construct the chair framework– learning how to shape and construct timber joints using pine and fastening standard components. **D&T Topics:** Motion and Forces. Ergonomics and anthropometrics: linked to the function of the chair design a great way to learn advance key words.	**Prototypes & Experimentation:** Acrylic & HIPs Timbers: MDF, plywood, soft/hardwoods Metals – brazing. Use a range of skills, tools and machinery. Focus practical tasks: developing skills. Learn about materials and their working properties and functions.	**Graphics:** Technical drawing: 3D, isometric, orthographic design. Mark making and rendering. Fonts and Typography. Manufacturing & industrial processes – link to sustainable issues in term 1. Learn the process of how materials are made and the impact on the environment.
	Theory: Reinforce H&S rules with a design task. **Literacy skills:** extended writing task (links to English).	**Design:** Creativity and drawing skills (links to Art). **Theory & Practical:** Reinforce subject knowledge through practical tasks.	**Theory & Practical:** Reinforce subject knowledge through practical and written tasks. **Design:** Creativity Skills.	**Theory & Practical:** Reinforce subject knowledge through practical skills.	**Theory & Practical:** Reinforce subject knowledge & materials through practical skills.	**Design:** Develop creativity, measuring and design skills (links to Art, Maths and Graphic design). **Theory:** Sustainability issues.

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Year	Autumn One	Autumn Two	Spring One	Spring Two	Summer One	Summer Two
10 GCSE AQA Exam Board	Introduction to Health & Safety in the D&T workshop! Specialist machinery focus. **Graphics Skills:** Freehand sketching. Tonal shading & mark making. 3D & 2D Shapes. Develop fonts & typography design. **Technical drawing skills:** Isometric, orthographic, exploded drawings, perspective drawing. Packaging design.	**Graphics Project:** Learn about paper & boards: characteristics and their functions. Finishes for graphics. How paper is made. **Art Movements:** Learn about British and international artists and designers. Links to Nepal & Mexican artwork. **Sustainable Issues**: 6R's and Fast Fashion. Renewable and Non-Renewable resources/Fairtrade. Link to Global Connections & Nepal.	**Book Design Task:** Illustrations/books product research analytical task. Iterative design. Incorporate font skills from term 1. Develop final book design. **CAD/CAM Project:** 2D design book cover. Laser cut the book cover. Prototype in card, engraved plywood. **Skills Box Project:** A range of carpentry joints using timbers (recycled materials). H&S rules in the workshop implemented with every project.	**Prototypes:** Use a range of skills, tools and machinery. Focus practical tasks: developing skills - **Prototypes using the following materials:** Polymers Timbers Fabrics Metal Smart Joining/fastening methods/de/reforming in all materials. Using a range of specialist tools and machinery. Learn about materials and their working properties and functions. Surface finishes for all the different materials.	**D&T Subject Knowledge:** Motion Forces Electronics – Soldering Project. Smart Materials. Anthropometric & Ergonomics. Evaluations and plan of making. Manufacturing & industrial processes – link to sustainable issues. Learn the process of how materials are made and the impact on the environment. Cotton, wool. Plywood. Paper. Plastic bottles into clothing. Injection moulding, blow moulding etc.	**NEA Mock:** Section A Mind map, design brief, product research & client interview. **NEA Release Date: June.** D&T AQA Contextual Challenge released on this day. Students can select their specialism for this project: Textiles, R.M, or Graphics or combine a selection of materials and skills. The D&T NEA is the reason why you opted to study D&T at a GCSE level. You will now be given a design problem and you will be a designer and have to create an exciting new and original idea. Developing design skills, creative and flair. Experimenting with materials and skills learnt over KS3 and Year 10!
	Theory: The power of advertising using fonts/typography and logos. **Design:** Develop skills, techniques and processes.	**Theory:** Reinforce subject knowledge through creative & written tasks. **Design:** Develop creativity and design skills.	**Theory:** The power of advertising through fonts. Imagery, colour etc. Composition of titles, images, font. **Practical:** Learn about CAD/CAM. New & emerging Technologies.	**Theory & Practical:** Use a range of skills, tools and machinery in all material disciplines. Develop skills, techniques and processes.	**Theory& Practical:** Learn about materials through practical and written tasks. **Design:** Use a range of skills, techniques and processes, creativity and flair.	**NEA 50% coursework:** **Theory:** Develop subject knowledge, key words & terminology. Reinforcing skills and subject knowledge from KS4.

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11 GCSE AQA Exam Board	D&T NEA: 50% of GCSE grade. Students can select their specialism for this project: Textiles, R.M, or Graphics or combine a selection of materials and skills. Section B: Design brief & spec Artist & Designer research to inspire concepts. Material research and characteristics.	D&T NEA: Section C/D/E Generating Design ideas. Development of designs Final design concepts. Prototyping. Section E/F: Realisations of ideas: Prototyping of final ideas. Evaluations ongoing. Final specification. Manufacturing plan. Client final feedback.	D&T NEA: Production Plan Specification Final evaluation. Client feedback. Revision: AQA Exam board BBC Bitesize Resources, Knowledge organisers. Retrieval techniques to develop subject knowledge, key words and terminology.	Revision: AQA Exam board BBC Bitesize Resources Knowledge organisers Retrieval techniques to develop subject knowledge, key words and terminology.	Exam Summer 2022 Written Examination (50% of GCSE Grade).	Exam Summer 2022 – TBC by exam board: AQA.
	Students can select their specialism for this project: Textiles, R.M, or Graphics or combine a selection of materials and skills. Using advance practical skills learnt in year 10.	**Advanced Practical Skills Examples:** Joining methods Brazing. Laminating & Sewing machine. Advanced Practical Skills: Laser cutter Clock made in acrylic, fabric, wood, card or a range of materials.	Evaluations and testing of prototypes. Exam revision on-going through NEA. Knowledge Organisers. Extended learning activities.	Practical - retrieval skills, techniques and processes Revision: tips and techniques for the written exam, practise papers. On-going health checks. Walk and talk mocks. End of topic assessments throughout KS4.	Written Examination (50% of GCSE Grade)	

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Enrichment Activities:

Super Learning Days: Year 7 Sustainable Awareness Day (learn about environmental issues, 6R'/fast fashion/renewable and non-renewable resources). Team work, creativity, solve a design problem, develop practical skills and presentation skills.

Nepal International School Collaboration: Miss Markwell's Fashion Club recently collaborated with the Sanskriti School in Nepal exploring the Nepalese Mithila art style and creating designs that was incorporated into fashion projects for the 2022 summer fashion show. A new international school collaboration will continue this year due to the success of this previous project!

Competitions:

KS3 & KS4 Rotary Club D&T Competition (Venue KLA. Date TBC).

Fashion Show Design Competition: Open to all year groups.

Design & Technology - Design a Sign for the entrance of the Technology Block.

Trips: KS4 and D&T Trip – TBC. KS5 BTEC Fashion Trip: V&A London on SLD (TBC).

Open Evenings:

KS4 students can volunteer as ambassadors to promote D&T to Year 6's Open Evening.

KS5 BTEC Fashions can volunteer as subject ambassadors to promote 6th Form Open Evening.

Clubs & Support:

KS3: Fashion & Textiles Club every week with Miss Markwell in T4.

KS3: Design & Technology Club every week with Mr Sedgley in T2.

KS4 and KS5 Support: T4 is open every lunch-time for students who would like to work on their coursework. Support available by Miss Markwell.

Afterschool catch-up sessions every week.

Summer BTEC Fashion Show:

Year 12 and 13 BTEC Fashion students showcase their fashion collection in the end of year Summer Fashion Show! Models from all year groups can participate and model in the show. Date in the school calendar: Wednesday 12th July, 7pm in the PPH.

Social Media: Makewell with Miss Markwell YouTube channel, TikTok, Instagram account where you can see all her creative online adventures. School Twitter where the D&T department regularly showcase students' work.

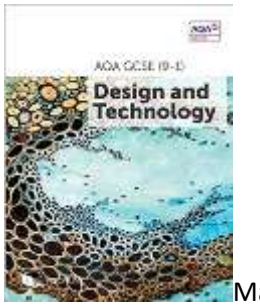
Revision Guides:

AQA BBC Bitesize Design and Technology https://www.bbc.co.uk/bitesize/examspecs/zby2bdm

Student Technology Website: https://www.technologystudent.com/

Makewell with Miss Markwell YouTube channel https://www.youtube.com/c/MakewellwithMissMarkwell/videos

Revision Guide: AQA GCSE Revision Design and Technology All-in-One Revision & Practice. ISBN 978-0-00-822740-1 Author Paul Anderson and David Hills-Taylor



Main Textbook: AQA GCSE (9-1) Design and Technology. ISBN: 978-1-910523-10-0 Author MJ Ross

ClearRevise AQA GCSE 8552 Illustrated revision and practice ISBN: 978-1-910523-24-7