Design & Technology

Design & Technology (D&T) is an area of study that focuses on planning, designing and creativity. The subject gives all students the opportunity to learn how to make things, repair products and discover solutions to different problems. This subject is one of the most progressive on the national curriculum, mainly due to the developments in technology and the rapidly changing world we live in. Technology is having an impact on the whole planet and we need to prepare our students for the developments they will encounter. Students in Design & Technology develop designing and making skills in addition to learning about electronics, computing, engineering, CAD, CAM, robotics, materials and textiles technology. They also develop business critical skills through problem-solving, innovation and team-work.

Throughout the Key Stage 3 course (Years 7 – 9), we aim to give all students a basic level of knowledge by helping them to be more creative, resilient, work independently, in groups and develop problem solving skills. These skills are transferable to other subjects and are all skills which will assist these children as they progress through the school and onwards.

In both Key Stages 3 and 4, students develop practical skills, creative skills and a knowledge of technology that will help prepare them for other academic subjects and their future. The course helps students to be more considerate of environmental impacts and the technological changes in the world they will encounter. Students are encouraged to work independently, develop problem solving skills and understand the process of design. The Key Stage 4 D&T course helps to develop some of the important skills, techniques and knowledge required for those students who intend to progress onto Key Stage 5. The course also develops the skills to lead into apprenticeships or specific college courses that focus on practical and creative skills.

Throughout Key Stages 3 and 4, we intend to deliver a wide curriculum giving students the chance to explore different areas of Design and Technology. The children develop and practise new skills and we aim to ensure that all students are confident in the following areas

- Help students to develop a variety of creative and practical skills through working with different techniques and materials
- Gain an understanding of designing, making and evaluating with a range of materials
- Develop technical knowledge in mechanical systems and properties of materials.
- Give students the opportunity to learn skills in cookery and be able to cook a range of predominantly savoury dishes.
- Develop an understanding of nutrition and health.
- Learn different techniques and skills in the kitchen.
- Understand about ingredients, their source, seasonality and the characteristics of the ingredients.
- Help to prepare students for an increasingly technical world.
- Gain awareness and understanding of the following factors
  - History of design
  - Social
  - Cultural
  - Environmental
  - Economic
- Further develop creative skills and techniques through, designing, making and evaluating.
- Prepare students to progress into apprenticeships or full-time career in creative and practical industries.
- Prepare students to progress into A Level course in product design.

Teaching Design and Technology is very different to other subjects. It focuses on so many different skills. Those who find creative subjects difficult can still excel in Design and Technology through the construction, engineering, science and mathematical elements of the subject. Those who are creative can work more with designing and

manufacturing. The course develops students to work both with function and form and our aim as a department is to help students to develop skills in both of these areas.

The expectation is that all young people will be able to enjoy and succeed in the different areas of Design and Technology, regardless of their prior experience and their background. The outcomes at Key Stage 4 rely heavily on completion of Non-Examination Assessment (NEA). We have high expectations for every learner and know that it is possible for all to achieve high grades in the NEA. This gives students the confidence when entering the examination and ultimately progressing and achieving beyond their target grade.

Year 7 Design & Technology

Students will study each of the units of work below for a period of 9 – 10 weeks. They will then rotate to the next teacher to learn another area of technology. Students learn four subjects in Year 7 - Graphics, Resistant Materials, Textiles and Food Nutrition & Preparation.

Resistant Materials

Content of study	Resistant Materials
What are the aims and objectives of this term?	During weeks one to five, we teach students the basic practical skills and bring students to a similar knowledge base. In weeks six to ten, we concentrate on working with different metals and learning about casting, creating moulds and making a pewter key ring. The theory we cover includes: • Recap of measurements • Introduction to timber and manmade board • Introduction to plastics • Prototyping • Understanding the work of other designers • Mechanisms • Analysing a brief • Flowcharts and planning • Research styles • Introduction to metal processes • Forces
What previous knowledge is required?	Some students enter Key Stage 3 with prior D&T knowledge but many have little if any experience of the subject. The aim is to develop all students' knowledge to bring them to a similar level by the end of this rotation.
How will this term's content help with future learning?	The practical skills students learn in this project helps to develop their confidence when using tools and equipment. The theory work involved in this unit gives the children an understanding of some of the basic skills required in the subject which will be used throughout Key Stage 3 and Key Stage 4.
Resources	Students who wish to develop further knowledge on the areas of study covered in Year 7 Resistant Materials can research areas on the link below: ENGINEERING - DESIGN AND TECHNOLOGY (technologystudent.com) Below are some of the videos that we use in this unit of work: https://www.youtube.com/watch?v=xLx4fVsYdTI https://www.youtube.com/watch?v=Vx0Z6LplaMU http://www.youtube.com/watch?v=2j4zJWMPgNw https://www.youtube.com/watch?v=7KUMPnByNBc https://www.youtube.com/watch?v=RNPIRfxUTQ4

Links to the national curriculum	• Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture • use research and exploration, such as the study of different cultures, to identify and understand user needs • select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties • develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools • understand how more advanced mechanical systems used in their products enable changes in movement and force • identify and solve their own design problems and understand how to reformulate problems given to them
Assessments	Students will be assessed on both practical pieces of work they complete. They will receive a formal assessment which takes place in week 5 of the rotation – this is based on the child's ability to analyse a brief and create sketched ideas. Students will receive homework every fortnight. One of these homework tasks is a piece of assessed work. Students are able to choose a Homework task from a choice of 48 different activities.

Food Preparation and Nutrition

Content of study	Food Skills
What are the aims and objectives of this term?	During weeks one to five, we aim to teach the basic practical skills and bring students to a similar knowledge base. In weeks 6 – 10, we concentrate on working with ingredients and equipment, learning different cooking methods, and creating dishes. The theory we cover includes: • Buying and storing food • The Eatwell guide • Carbohydrates • Minerals • Water and fibre • Marketing influences • Why food is cooked • Sequencing • Food waste and packaging • Food production
What previous knowledge is required?	Some students enter Key Stage 3 with prior D&T knowledge but many have little if any experience of the subject. The aim is to develop all students' knowledge to bring them to a similar level by the end of this rotation.
How will this term's content help with future learning?	The practical skills students learn in this project helps to develop their confidence when using tools and equipment. The theory work involved in this unit gives the students an understanding of some of the basic skills required in the subject which will be used throughout Key Stages 3 and 4.
Resources	Students who wish to develop further knowledge on the areas of study covered in Year 7 Food can research areas on the link below: Food A Fact Of Life Below are some of the videos that we use in this unit of work. https://youtu.be/HY_ygiwVlCM https://youtu.be/gbJxgRqzN3A

	https://youtu.be/zFoD3F-nlec https://youtu.be/i3GfrZR2DUE https://youtu.be/zFoD3F-nlec https://www.youtube.com/watch?v=62O868-bYOk https://youtu.be/Gls9o6m2VHE
Links to the national curriculum	• Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life. • Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. • As part of their work with food students should be taught how to cook and apply the principles of nutrition and healthy eating. • Cook a range of predominantly savoury dishes so that they are able to feed themselves and others a healthy and varied diet. • Use utensils and equipment • Apply heat in different ways • Using awareness of taste, texture and smell to decide how to season dishes and combine ingredients • Understand and apply principles of nutrition and health. • How to make informed choices about food and drink to achieve a varied and balanced diet, including awareness of portion sizes and cost. • Understand the source, seasonality and characteristics of a broad range of ingredients
Assessments	Students will be assessed on practical skills and dishes they complete. They will receive a formal assessment which takes place in week 8 of the rotation – this is based on the child's ability to identify the features and purposes of a recipe and sequence a recipe in the correct order adding food safety points, tools and timings. Students receive feedback on their work and are given the opportunity to improve their work and grade in week 9. Students will receive homework every fortnight. One of these homework tasks is a piece of assessed work. Students are able to choose a Homework task from a choice of 48 different activities.
Graphics	
Content of study	Graphics Skills
What are the aims and objectives of this term?	During weeks one to five, we aim to teach the basic practical skills and bring students to a similar knowledge base – making prototypes from corrugated board, cutting, finishing, line bending acrylic, and learning how to use CAD. In weeks 6 – 10, we concentrate on working with plastics, paper and board and learning about cutting, shaping and finishing styrofoam, designing and making packaging for a piece of hand-held technology. The theory we cover includes: • Rendering • Typography • Sketching • One point perspective • Smart materials • Logos • Sustainability and the 6R's

	• Nets • Packaging symbols
What previous knowledge is required?	Some students enter Key Stage 3 with prior D&T knowledge but many have little if any experience of the subject. The aim is to develop all students' knowledge to bring them to a similar level by the end of this rotation.
How will this term's content help with future learning?	The practical skills students learn in this project helps to develop their confidence when using tools and equipment. The theory work involved in this unit gives the children an understanding of some of the basic skills required in the subject which will be used throughout Key Stages 3 and 4..
Resources	Students who wish to develop further knowledge on the areas of study covered in Year 7 can research areas on the link below: GRAPHICS SECTION (technologystudent.com) Below are some of the videos that we use in this unit of work. https://m.youtube.com/watch?v=GmNOsHgsyTg https://www.youtube.com/watch?v=KAx390oVKuo&app=desktop https://www.youtube.com/watch?v=egNoYDtYVzE&app=desktop https://www.youtube.com/watch?v=GRscxQFLCx4&a
Links to the national curriculum	• Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture • use research and exploration, such as the study of different cultures, to identify and understand user needs • select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties • develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools • identify and solve their own design problems and understand how to reformulate problems given to them
Assessments	Students will be assessed on both practical pieces of work they complete. They will receive a formal assessment which takes place in week 7 of the rotation – this is based on the child's ability to research environmental issues, analyse the research giving examples, and to write a conclusion summarising their findings. Students will receive homework every fortnight. One of these homework tasks is a piece of assessed work. Students are able to choose a Homework task from a choice of 48 different activities.
Textiles	
Content of study	Textiles Skills
What are the aims and objectives of this term?	Practical During weeks 1 – 5, we aim to teach basic hand sewing skills. In weeks 6 – 10, we ask our students to create a creature made from socks using hand sewing skills. The theory we cover includes: • Natural and synthetic fibres • Traditional textiles from around the world • Recognising sewing tools and equipment • Woven, knitted and bonded fabrics • #ThinkDo activities • Designing soft toys for different customers

	• Developing design ideas • Electronics in textiles • Toy safety – BSi, CE and the Lion mark • Self-evaluation
What previous knowledge is required?	Some students enter Key Stage 3 with prior D&T knowledge but many have little if any experience of the subject. The aim is to develop all students' knowledge to bring them to a similar level by the end of this rotation.
How will this term's content help with future learning?	The practical skills students learn in this project helps to develop their confidence when using tools and equipment. The theory work involved in this unit gives the students an understanding of some of the basic skills required in the subject which will be used throughout Key Stages 3 and 4.
Resources	Below are some of the videos that we use in this unit of work. https://www.youtube.com/watch?v=_xnbSc51pGw https://www.youtube.com/watch?v=C8vA0UwLS70 https://www.youtube.com/watch?v=EZRscF-zVz4 https://www.youtube.com/watch?v=6X0cgWHhZX8
Links to the national curriculum	• Use research and exploration, such as the study of different cultures, to identify and understand user needs. • Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture. • Develop and communicate design ideas using annotated sketches, detailed plans.
Assessments	Students will be assessed on both practical pieces of work they complete. The formal written assessment takes place in week 7 of the rotation – this is a development of design ideas task. Students will receive homework every fortnight. One of these homework tasks is a piece of assessed work. Students are able to choose a Homework task from a choice of 48 different activities.