Intent for Design and Technology KS3 and KS4 2021-22

Intent

Design and Technology in our school will equip students with the knowledge, understanding and skills required to solve real world problems through a range of contexts involving design principles such as analysis, designing making and evaluating. Our curriculum will encompass and encourage students to design and make whilst enabling them to make informed decisions about a wide range of further learning opportunities and career pathways whilst developing vital life skills and understanding future career opportunities.

Goal for Every Student

KS3 Aims of learning

– To develop creativity through a range of relevant problems that are linked to an increasing technological world.

- To apply knowledge, understanding and skills to produce high quality products for a range of users.
- To understand how different cultures, past and present technologies impact on the world around them both now and in the future.

KS4 Aims of learning

- To develop creativity through a range of relevant contexts that are linked to an increasing technological world.
- To apply knowledge, understanding and skills to produce high quality prototypes and products for a range of users and technical problems.
- To understand how past and present technologies impact on the world around them.
- To understand advanced technological systems and how to achieve functional solutions to a range of imaginative and relevant problems.
- To understand how other subjects, interact with technological problems and future career opportunities (STEM).

KS3

- To identify and solve their own design problems through the study of different cultures and user needs. - To communicate ideas that allow others to understand their thinking.
- To investigate the world around them generating creative solutions to technical problems.
- To make high quality prototypes and products using a variety of technical solutions both in Food (based on the 2014 Food Plan) and in Resistant Materials.
- To test, refine and evaluate their and other people's products and understand how technology impacts on individuals, society and the environment.

KS4

- To identify and solve their own design problems through the study of different cultures and user needs.
- To communicate ideas that allow others to understand their thinking. - To investigate the world around them generating creative solutions to technical problems.
- To make high quality prototypes and products using a variety of technical solutions.
- To test, refine and evaluate their and other people's products and understand how technology impacts on individuals, society and the environment.
- To develop technical principals that inform and improve technical understanding and future technical innovations.

Implemented pace

KS3

The students shall be covering two topic every rotation which will last 16-week cycle in year 7 and 8 with 16 lesson planned in year 9.

KS4

The course to be completed by March of Yr11.

Impact

- The KS3 workbook has a progress tracker on the front page on which the student has the opportunity for self-reflection and record on-going progress.
- Practical assessments are completed by all teachers throughout the topic
- Written assessments are completed by all teachers at the end of the topic cycle followed by GEM work
- GEM work based on KPIs

Moderation of assessment task marking completed during JPD session

Vision: inspire learning through high quality thinking and creativity

Design and Technology in our school will equip students with the knowledge, understanding and skills required to solve real world problems through a range of contexts involving design principles such as analysis, designing making and evaluating. Our curriculum will encourage students to design and make whilst enabling them to make informed decisions about a wide range of further learning opportunities and career pathways as well as develop vital life skills and future job opportunities.

KS3 Aims of learning

1. To develop creativity through a range of relevant problems that are linked to an increasing technological world.

2. To apply knowledge, understanding and skills to produce high quality products for a range of users.

3. To understand how past and present technologies impact on the world around them.

Goal for every student

1. To identify and solve their own design problems through the study of different cultures and user needs.

2. To communicate ideas that allow others to understand their thinking.

3. To investigate the world around them generating creative solutions to technical problems.

4. To make high quality prototypes and products using a variety of technical solutions.

5. To test, refine and evaluate their and other people's products and understand how technology impacts on individuals, society and the environment.

Targets for teachers

1. Students to receive the same experiences regardless of teaching specialisms

2. To stretch and challenge all students encourage critical thinking and self-resilience.

3. To prepare students for KS4 and how technology impacts the world around them.

4. That assessment informs both the teacher and student.

KS4 Aims of learning

1. To develop creativity through a range of relevant contexts that are linked to an increasing technological world.

2. To apply knowledge, understanding and skills to produce high quality prototypes and products for a range of users and technical problems.

3. To understand how past and present technologies impact on the world around them.

4. To understand advanced technological systems and how to achieve functional solutions to a range of imaginative and relevant problems.

5. To understand how other subjects, interact with technological problems and future carrier opportunities (STEM).

Goal for every student

1. To identify and solve their own design problems through the study of different cultures and user needs.

2. To communicate ideas that allow others to understand their thinking.

3. To investigate the world around them generating creative solutions to technical problems.

4. To make high quality prototypes and products using a variety of technical solutions.

5. To test, refine and evaluate their and other people's products and understand how technology impacts on individuals, society and the environment.

6. To develop technical principals that inform and improve technical understanding and future technical innovations.

Targets for teachers

1. Students to receive the same experiences regardless of teaching specialisms

2. To stretch and challenge all students encourage critical thinking and self-resilience.

3. That assessment informs both the teacher and student.

4. Exam technique frequently practised to prepare for examinations (boxing up/ text-mapping)

5. GEM cycles based on KPIs

6. T4W included within learning cycles.

Core Competences	How will this be achieved?		
	Year 7	Year 8	Year 9
Designing	Research and explore different design context Identify and solve their own design problems Use communication skills to design and model ideas. Pop-up Card design Bookend design	Research and explore different design context Identify and solve their own design problems Develop a specification to inform the design of innovative, functional, and appealing products Use communication skills to design and model ideas. Control Systems electronics and simple circuits	Research and explore different design context Identify and solve their own design problems Develop a specification to inform the design of innovative, functional, and appealing products Use communication skills to design and model ideas. Incorporate links to other subjects through Mathematical modelling and scientific principles.
Making	Hand skills with basic tools and machines such as scroll saws, disc sander and pedestal drills.	Hand skills with basic tools and machines such as scroll saws, disc sander and pedestal drills. Use of CAD/ CAM to machine a part of their project.	Working with materials using hand and machine tools Forming Bending
Technical		Environmental, social and moral issues.	Materials and sources

Knowledge		Future technologies Biomimicry	Engineering processes Structures
Evaluation	Evaluation of own work Peer Assessment through card modelling and making of focused practical task	Evaluation of own and others work to help develop understanding	Evaluation of own and others work with the aim of further development of skills and product

Health and safety	Understand the principles of, workshop safety when using hand and machine tools.	Understand the principles of, workshop safety when using hand and machine tools.	Understand the principles of, workshop safety when using hand and machine tools.

No	Practical skills/ techniques	Year 7	Year 8	Year 9
1	Safety within the workshop	Yes	Yes	Yes
2	Risk assessment		Yes	Yes
3	Safe working of hand tools	Yes	Yes	Yes
4	Safe use of modelling equipment	Yes	Yes	Yes
5	Safe working of machine tools	Yes	Yes	Yes
6	Freehand drawing	Yes	Yes	Yes
7	Oblique drawing	Yes		
8	Isometric drawing		Yes	Yes
9	Orthographic drawing		Yes	Yes
10	CAD	Yes	Yes	Yes
11	Enlarging and reducing images	Yes	Yes	
12	Typography	Yes	Yes	
13	Rendering	Yes	Yes	Yes
14	Analysis of products		Yes	Yes
15	Writing a design context		Yes	Yes
16	Writing a design specification		Yes	Yes
17	Marking out materials	Yes	Yes	Yes
18	Cutting materials by hand	Yes	Yes	Yes
19	Joining materials by hand	Yes	Yes	Yes
20	Finishing materials by hand	Yes	Yes	Yes
21	CAM		Yes	Yes
22	Forming materials		Yes	Yes
23	Bending materials		Yes	Yes
24	Moulding materials			Yes
25	Vacuum forming			Yes
26	Casting			
27	forging			
28	Soldering components		Yes	
29	Wood Turning			
30	Brazing			
31 32 33	Metal turning Hand Sawing Machine Sawing			

Core Competences		
	Year 10	Year 11
Designing	Research and explore different design context Identify and solve their own design problems Develop a specification to inform the design of innovative, functional, and appealing products Use communication skills to design and model ideas. incorporate links to other subjects through Mathematical modelling and scientific principles.	Research and explore different design context Identify and solve their own design problems Develop a specification to inform the design of innovative, functional, and appealing products Use communication skills to design and model ideas. incorporate links to other subjects through Mathematical modelling and scientific principles.

Making	Working with materials using hand and machine tools Casting Prototyping Vacuum forming 3D printing	NEA TASK
Technical Knowledge	Design and modern technologies Manufacturing Social and moral issues Designers and design movements	Examination preparation
Evaluation	Evaluation of own and others work with the aim of further	NEA TASK

	development of skills and products	
Risk assessment and safety	Understand the principles of, workshop safety when using hand and machine tools.	

Through food and nutrition, students will:

1. Develop and demonstrate creativity and skills to develop confident, healthy, safe and independent students.
2. Demonstrate effective and safe cooking skills by planning, preparing and cooking using a variety of food commodities, cooking techniques and equipment.
3. Develop knowledge and understanding of the functional properties and chemical processes.
4. Understand the relationship between diet, nutrition and health.
5. understand the economic, environmental, ethical, and socio-cultural influences on food availability, production processes, and diet and health choices
6. Demonstrate knowledge and understanding of functional and nutritional properties, sensory qualities and microbiological food safety considerations when preparing, processing, storing, cooking and serving food
7. understand and explore a range of ingredients and processes from different culinary traditions (traditional British and international), to inspire new ideas or modify existing recipes.
8. Develop the use of numeracy and literacy in a practical manner. Students develop confidence and understanding in reading and following recipes, and comprehension of instructions to produce a final dish.