Design Technology

RIDGEWOOD SCHOOL

Year 9 Learning Maps – Design Technology Rotation

Construction			
Prior Learning This topic builds on technology delivered in Years 7/8 using biomimicry and bio morphism to design a house for a client. Knowledge will be developed to enhance designing skills using CAD software.	**Current Learning** In this project students will develop CAD skills (Homestyler, Google Sketch Up, Solid Edge etc.) to design a house for a given client. These different clients are: A family of 4, Students, Millionaire lottery winners. Students will undertake initial ideas using free hand sketches then use CAD software to develop the ideas further.	**Subsequent Learning** This topic will prepare students to make informed choices in the future, when designing using CAD. They will recognise the skills studied in BTEC Construction to help them make informed option choices.	

Lesson Sequencing		**Tier 3 Vocabulary**	**Wider Reading Opportunities**	**Ways in which parents/carers can support**
Lesson 1	Construction industry	Construction industry Butterfly effect Specification Greenfields Brownfields South facings buildings Recycling Wind turbines Biomass Green Roofs	Typical Roman Stone Arch Construction (technologystudent.com) The Millau Bridge - Southern France (technologystudent.com)	Look at different buildings in your local area and discuss how these might have been built. Watch the 'Grand Designs' TV programme together.
Lesson 2	Biomimicry and bio morphism			
Lesson 3	Client briefs			
Lesson 4	Sustainability			
Lesson 5	Ideas			
Lesson 6	Ideas			
Lesson 7	Ideas			
Lesson 8	Ideas			
Lesson 9	Improvements			

Mobile Phone Holder

Prior Learning	Current Learning	Subsequent Learning
This topic builds on technology delivered in Years 7 and 8, using metal and plastic to manufacture a mobile phone holder. Knowledge will be developed to enhance both evaluative and practical skills.	In this project students will develop CAD/CAM skills whilst manufacturing a mobile phone holder independently, carrying out a range of quality control checks to ensure a high quality product is produced. Students will use the following equipment to manufacture the mobile phone holder: 2D design, laser cutter, scribe, tin snips, hammer, centre punch, g-clamp, electric hand drill, coping saw, files, vice etc. Once manufactured students will evaluate their final product, carrying out testing and user group feedback.	This topic will prepare students to make informed choices in the future, when manufacturing with metals and plastics. They will recognise the skills studied in GCSE Engineering to help them make informed option choices.

Lesson Sequencing		Tier 3 Vocabulary	Wider Reading Opportunities	Ways in which parents/carers can support
Lesson 1	Metals	Evaluation Filing Drilling Metals Anthropometrics 2D design Ferrous Non- Ferrous Alloys Scribe	CGP Books - KS3 Science Workbook - Levels 3-7: Materials and Their Properties Workbook TINMAN'S SNIPS (technologystudent.com) HAMMERS - BALL PEIN, CROSS PEIN AND STRAIGHT PEIN (technologystudent.com) Research - Metals (technologystudent.com)	Look at different metals products around the house and discuss the different joining methods. Look at different tools around the home and identify the correct name and function.
Lesson 2	CAD			
Lesson 3	CAD			
Lesson 4	Practical			
Lesson 5	Practical			
Lesson 6	Practical			
Lesson 7	Practical			
Lesson 9	Evaluation			
Lesson 9	Practical/ improvements			

Pewter Casting

Prior Learning	Current Learning	Subsequent Learning
This topic builds on technology delivered in Years 7/8 using metal to manufacture a keyring. Knowledge will be developed to enhance both research and practical skills focussing on the pewter casting process.	In this project students will develop CAD/ CAM skills whilst manufacturing a keyring independently, using the pewter casting process. Students will use the following equipment to manufacture the keyring: 2D design, laser cutter, coping saw, pillar drill, wet and dry, polish, heat treatment room. They will undertake some research focusing on the ACCESSFM analysing tool to analyse current keyrings already on the market.	This topic will prepare students to make informed choices in the future, when manufacturing using CAD/CAM. They will recognise the importance of analysing products in helping them to make informed decisions, which is an essential skill for future success in DT.

Lesson Sequencing		Tier 3 Vocabulary	Wider Reading Opportunities	Ways in which parents/carers can support
Lesson 1	Brief analysis/ pewter casting demo	Product Analysis ACCESSFM Pewter Casting Batch production CAD CAM Vice Flat file Round file	SMALL SCALE ALUMINIUM CASTING - YouTube Pewter Casting and Safety (technologystudent.com) Materials_test1a (technologystudent.com)	Look at different products around the home and discuss how these have been made. Research using books or the internet about investment casting and compare this to pewter casting.
Lesson 2	Research			
Lesson 3	Research/ ideas			
Lesson 4	Ideas on computer			
Lesson 5	Ideas on computer			
Lesson 6	Improvements			
Lesson 7	Pouring/ casting			
Lesson 8	Finishing			
Lesson 9	Finishing			

LEGO Mindstorms (Y9)

Prior Learning	Current Learning	Subsequent Learning
This topic builds on technology delivered in Years 7 and 8, looking at new technologies that are emerging and how these can be used in new products. Knowledge will be developed to enhance both research and practical CAD skills.	In this project students will develop accuracy whilst programming the LEGO Mindstorms kits. Students will be taught basic mechanical LEGO building skills to enhance their understanding within systems and control and to help them apply this is a practical manner. They will undertake some research into different ways that existing robotic technology can be used. To challenge students, they will then apply their research and basic mechanical LEGO building skills to complete a range of different challenges set by their teacher.	This topic will prepare students to be able to follow, understand and create their own control systems using programming and robotics. They will recognise the importance of research in helping them to make informed decisions, which is an essential skill for future success in DT.

Lesson Sequencing		Tier 3 Vocabulary	Wider Reading Opportunities	Ways in which parents/carers can support
Lesson 1	Robots in the real world	Technological Advancement Computer Aided Design (CAD) Programming Integrated Circuit Robotics Artificial Intelligence Inputs Outputs Connectivity	Real Life Robots 10 Coolest Robots in the World 15 Everyday Uses of Artificial Intelligence	Look at different products around the house that use a programming system. Identify how they use the programming system to function. Identify products around the home that can be enhanced further by the application of a programmed/AI system.
Lesson 2	Programming Basics			
Lesson 3	Programming Challenges			
Lesson 4	KAP – Development			
Lesson 5	Freestyle Challenge			
Lesson 6	Freestyle Challenge			
Lesson 7	Freestyle Challenge			
Lesson 8	Freestyle Challenge			
Lesson 9	Evaluation			

Food Provenance

Prior Learning	Current Learning	Subsequent Learning
This topic builds on the different food projects delivered in Years 8 and 9, by cooking a range of different dishes students will develop their knowledge on The Eat Well Guide and how to use specialist equipment safely and hygienically.	In this project students will learn all about how food can affect the environment and understand different ways to make more environmentally conscious decisions when planning meals and purchasing ingredients. Students will learn about advantages and disadvantages of foods such as 'food miles', to give them the tools to shop more consciously.	This topic will prepare students to be able to cook using meat and fish effectively, to produce a high quality product. Students will also know what to look for when shopping in order to determine the carbon footprint of the food they eat and how ingredients can be adapted to be more environmentally friendly.

Lesson Sequencing		Tier 3 Vocabulary	Wider Reading Opportunities	Ways in which parents/carers can support
Lesson 1	Introduction to food provenance and research	Provenance Sustainability Food miles Seasonal Locally sourced Moral issues Environment Meat structures	WJEC Vocational Award Hospitality and Catering Level 1/2: Student Book : Tull, Anita, Palmer, Alison: Amazon.co.uk: Books Meat - Food A Fact Of Life Food safety advice when preparing and cooking foods - Food safety 2 – CCEA - GCSE Home Economics: Food and Nutrition (CCEA) Revision - BBC Bitesize The facts about food miles - BBC Good Food	Shopping: Challenge your child to read food labels and explain what they mean. Let them support with the shopping. Challenge them to choose healthier, better value, more environmentally friendly options. Dinner time: Support your child in planning and preparing an environmentally friendly dinner for the family.
Lesson 2	KAP theory lesson			
Lesson 3	Pasty practical			
Lesson 4	Meat theory lesson			
Lesson 5	Pasta bolognaise practical			
Lesson 6	Diet cola chicken practical			
Lesson 7	Improvements/DIRT			
Lesson 8	Yorkshire rascals practical			
Lesson 9	Pizza practical			

Meal Planning

Prior Learning	Current Learning	Subsequent Learning
This topic builds on the different food projects delivered in Years 8 and 9, by cooking a range of different dishes students will develop their knowledge on preparing meals for people with a special diet.	In this project students will learn about how to use their existing knowledge and new knowledge to plan healthy meals for different groups of people, taking into consideration various factors including cost, lifestyle factors and health conditions. Students will put these skills into practice through practical cookery lessons.	This topic will prepare students to be able to make informed choices when planning meals, shopping for ingredients and preparing and cooking dishes. Students will be able to recognise the impact of their diet on their health and possibly make wiser choices as a result.

Lesson Sequencing		Tier 3 Vocabulary	Wider Reading Opportunities	Ways in which parents/carers can support
Lesson 1	Introduction to meal planning	Medical Ethical Religion Fairtrade Environment Deficiency Life Stages Budget Packaging Labelling	Love Food Hate Waste | Kids' cooking recipes | BBC Good Food	Leisure time: food programmes such as 'Inside the Factory', 'Supersize vs Super Skinny', 'The Great British Bake-Off' and 'Eat Well for Less'. Shopping: Challenge your child to read food labels and explain what they mean. Let them support with the shopping, challenging them to choose healthier, better value, more environmentally friendly options. Dinner time: Support your child in planning and preparing dinner for the family.
Lesson 2	Cheese straws practical			
Lesson 3	Meal planning theory lesson			
Lesson 4	Key assessed piece lesson 1			
Lesson 5	Pasta fiorentina practical			
Lesson 6	Key assessed piece 2			
Lesson 7	Chicken curry practical			
Lesson 8	Improvements			
Lesson 9	Mac and cheese practical			