

Technology Department: KS3 LTP

Vision

Technology is developing rapidly around the world, our aims are to encourage all our students to participate, discover and engage with this new world of technological advancement through independent learning, innovative and creative thinking. This will enable them to have astute opinions to develop a product concept from visualisation to prototype with a solution driven mindset. At Eastlea Community School, Design and Technology is an inspiring, fun, rigorous and practical subject. We are passionate about developing and encouraging creativity, teamwork, determination and resilience in all our students. Also, the world is becoming more aware and in tune with the importance of healthy eating. To achieve this, we aim to encourage and equip our students with knowledge, skills and understanding of effective application of nutrition knowledge to develop and contribute to human health, well-being and the prevention of disease.

Teaching and Learning

The philosophy of our teaching and learning is based on the belief that all students should be able to take risks, experiment and solve real life problems by designing and making innovative products. They should also be able to have empirical knowledge, skills and understanding of food science, nutrition and cooking. We believe that all students can make learning progress and achieve their potential.

We are passionate about the use of new technologies such as 3D printers, Laser cutters, Programmable devices, IoT technology, and Robotics. The aim is to fully equip our students with knowledge and skill for a possible future career in designing, technology, engineering, and be able to engage with technology in any context they may find themselves.

The team is made up of dedicated specialist design and technology teachers with expertise in Systems and Control, Textiles Technology, Product Design, Graphic Products, Food and Nutrition. As a team we encourage and facilitate designing and making inclusive products that solve real life problems within a variety of contexts and users.

At Key Stage 3 each Year Group works through a variety of creative projects which allows steady progression in: Designing, Making, Evaluation, Technical Knowledge, Food Preparation and Nutrition (the areas to be assessed under the new curriculum).

Reading

Catering/ Food Preparation and Nutrition:

Textbook: Wjec Eduqas GCSE Food Preparation and Nutrition.
Etextbook of Wjec Eduqas GCSE Food Preparation and Nutrition.

Design and Technology

Textbook: Wjec Eduqas (9 – 1) Design and Technology
E-textbook of Wjec Eduqas GCSE (9 – 1) Design and Technology.

Topics

Within Design & Technology, the students will study:

Investigate, Design, Model, Manufacture and Evaluate in response to contextual briefs relating to:

Product Design
Graphic Products
Electronics, Systems and Control
Textiles Technology

Students will also study core contents such as: Manufacturing processes, Different Materials, Geometrical calculations, Mechanisms, Electronic Devices/Components, Programming Microcontrollers, Sustainability and Impacts, Product Designers, Products and Manufacturing, Ethical, Moral and Social issues, Impacts of New and Emerging Technologies.

Within Food and Nutrition, the students will study:

- Principles of Nutrition
- Diet and Good Health
- The Science of Cooking Food
- Food Provenance and Food Waste
- Food Spoilage
- Cultures and Cuisines
- Technology Technological Developments
- Factors Affecting Food Choice.

Skills will include:

- Measuring and working out amounts of ingredients.
- Cutting or combining a variety of different materials.
- Using the oven, grill, microwave and other new high profile equipment .
- Cook different dishes by applying medium and low levelled skills
- Using various utensils and cooking equipment
- Modifying ingredients to create a desired outcome.
- Using and manipulating modern and smart materials.
- Creating products using computer aided designing (CAD).
- Knowledge and understanding of computer aided manufacturing (CAM).
- Awareness of modern manufacturing techniques.
- Make and identify electronic systems.
- Using and creating programmable components.
- Identifying and working with mechanical components and devices.
- Create biomimicry and apply the iterative process.
- Forming shapes and marking.
- Creating products using and recognising new technologies such as 3D printers, Laser cutters, Programmable devices, IoT technology, and Robotics.

Literacy/Writing

Within Technology, students are taught to use the Eastlea Presentation Policy. This policy enables the students to improve the quality of their handwriting and presentation skills when completing:

- Peer assessing task
- Evaluating
- Analysing tasks
- Long writing task
- Assignments

Writing Skills include:

Application of correct terminology, spelling tests, using correct grammar and paragraphs , using dictionaries, use of standard English, and practice Spelling.

Assessment

After each rotation (carousel), students are assessed by a 25% written exam. The exam is devised from the relevant GCSE exam papers in compliance with the teaching and learning completed within KS3. This aims to ensure validity and standardisation procedures.

Technology and Outcome

At the end of KS3 students wanting to take the option of GCSE Design and Technology will be equipped with 40% of knowledge and understanding of the subject having covered 60% of required curriculum contents at KS3. This will enhance their chances of achieving a grade 5 or above.

Our goal is to equip our students with knowledge and skill for a possible future career in designing, technology, engineering, and be able to engage with technology in any context they may find themselves.

Enrichment Programme:

- Educational Visits.
- Clubs: Healthy Eating & Cooking Club
- 3D Designing/Modelling Club
- Fashion Designing Club
- Go Karting Club
- Drone Designing and Making Club

Learning Resources:

Recommended Internet Sites to help students achieve:

How stuff works

www.howstuffworks.com

Design and Tech. online

www.dtonline.org

Design and Technology. On the web

www.design-technology.info



Technology Student

www.technologystudents.com

Mr D & T

www.mrdnt

Design and Technology Association

<https://www.data.org.uk/>

BBC GCSE Revision

<http://www.bbc.co.uk/schools/gcsebitesize/design/>

V&A Museum

<http://www.vam.ac.uk/>

Designers guide to manufacturing

<http://www.designinsite.dk/>

Sustainability navigator

<http://www.bsigroup.com/en-GB/Sustainability-Standards-Navigator/>

University of Cambridge D&T resources

<http://www-materials.eng.cam.ac.uk/mpsite/default.html>

Food and Nutrition

<https://www.wiec.co.uk/home/student-support/past-papers/>

<https://www.bbc.co.uk/bitesize/subjects/zm6wfg8>

<https://illuminate.digital/eduqasfood/>

Year 9	Textiles Technology (Rotation 1)	Electronic, Systems and Control (Rotation 2)	Graphics Products (Rotation 3)	Food and Nutrition (Rotation 4)
	Impact of new and emerging technologies Sustainability - 6Rs of sustainability Generation of Energy Understanding Materials - modern, smart, composite and technical textiles. Woven, non-woven and knitted textiles Contextual Mini NEA Project	Electronic Systems Programmable microcontroller and customisation of operations. Mechanical devices, motion and forces Paper and Boards Contextual Mini NEA Project	Natural & Manufactured Timber Ferrous and Non-Ferrous Metals Thermoforming and Thermosetting Polymers Natural, synthetic, blended and mixed fibres, and woven, non-woven and knitted textiles Contextual Mini NEA Project	The Hazardous Analysis Critical Control Point, Food Preservation Spoilage Cross- contamination, Food commodities: Mixtures and recipes Food preservation Commodities Modifying bread Seasonal foods The science of cooking
	Assessment	Assessment	Assessment	Assessment

Year 8	Textiles Technology (Rotation 1)	Electronic, Systems and Control (Rotation 2)	Graphics Products (Rotation 3)	Product Design (Rotation 4)	Food and Nutrition (Rotation 5)
	<p>Consumer choice and sustainability Raw material and Transportation Battery & Solar Microencapsulation: Biomimetics Remote control system Micro Bit -Programmable microcontroller interface with other devices.</p> <p>Advantages & disadvantages</p> <p>Introduction to forces and effects on motions The use of ISO sizes. forestation and deforestation - Hardness & Elasticity Natural sources of polymer Sources of regenerated textiles. Contextual Mini NEA Project</p>	<p>Market pull and sustainability</p> <p>Application and disposal</p> <p>Mains electricity</p> <p>Photochromic fibres/fabrics</p> <p>Analogue sensors. Arduino - Programmable microcontroller interface with other devices. Advantages & disadvantages Applications of principles in electrical devices. The use of grammage -GSM Origin and categorisation of natural timber Conductivity, toughness and ductility Categories of polymer</p>	<p>Technology push and sustainability</p> <p>Manufacturing & Distribution</p> <p>Petrol/diesel/electricity Thermo-chromic fibres/fabrics Digital sensors.</p> <p>Crumble - Programmable microcontroller interface with other devices. Direct control system. Advantages & disadvantages</p> <p>Applications of principles in mechanical devices</p> <p>The use of microns Categorisation and properties of natural timber</p>	<p>Global production and its effect of people and culture. Life cycle analysis of material products and impacts on the environment. Different energy storage devices and applications Polymorph properties and applications Control systems. System flowcharts. Increasing and reducing outputs in mechanical devices. Sources and how to manufacture paper. Defects in timber. Timber lamination process.</p> <p>Heat treatment of metals and its effects.</p> <p>Ecological and social footprint of polymer</p>	<p>Introduction to Food and Nutrition &</p> <p>Baseline test -</p> <p>Food storage and Food Spoilage and Contamination (Extended writing task)</p> <p>Bread rolls and pizza base (Practical - freeze pizza base)</p> <p>Investigation – Experiment with the commodities: group work & assessment</p> <p>Cheese and onion Triangles – PRACTICAL</p>

		<p>Sources of Synthetic textiles. Contextual Mini NEA Project</p>	<p>Tensile strength & Malleability</p> <p>Synthetic sources of polymer</p> <p>Sources of natural textiles.</p> <p>Contextual Mini NEA Project</p>	<p>Laminated and coated fabrics.</p> <p>Contextual Mini NEA Project</p>	<p>Diet and good health</p> <p>Pizza for a child Different diets and vegetarians/food commodities</p> <p>PRACTICAL: Chocolate brownies</p> <p>Digestive system (writing task) & Food Provenance</p> <p>Macro - micro nutrients and test on nutrients</p>
Assessment					Assessment

Year 7	Textiles Technology (Rotation 1)	Electronic, Systems and Control (Rotation 2)	Graphics Products (Rotation 3)	Product Design (Rotation 4)	Food and Nutrition (Rotation 5)
	<p>Fair-trade and global production Linear and circular economy Energy generation and storage</p> <p>Electro -luminescent & Quantum -Tunnelling composite (QTC)</p> <p>Introduction to ICs. Output devices. Introduction to motions. Laminated layers Seasoning</p> <p>Source and melting of metal</p>	<p>Raw Material & Transportation for manufacturing. Rethink & Reuse. Photovoltaic Application of polymorph</p> <p>Introduction to the Arduino (open-source electronics platform)</p> <p>Control devices that include switching Mechanical devices - output Improvement of appearance Structure and surface finish Alloys Thermoforming Synthetic fibre. Woven Fabrics. Contextual Mini NEA Project</p>	<p>Manufacturing and distribution</p> <p>Recycle & Repair</p> <p>Wind - up Micro-fibres in clothing manufacturing</p> <p>Introduction to crumble.</p> <p>Control devices that include counting</p> <p>Mechanical devices - process</p> <p>Improvement of strength</p> <p>Strength and grain</p> <p>Ferrous</p>	<p>Application/usage & Disposal.</p> <p>Reduce & Refuse</p> <p>Advantages & disadvantages of renewable energy.</p> <p>Theoretical Polymorph</p> <p>Introduction to microbit.</p> <p>Control devices that include timing Mechanical devices - Input Improvement of finish</p> <p>Absorbency Non-Ferrous</p> <p>Thermosetting Natural synthetic.</p>	<p>Cooking and food Preparation Safety in the Food Room Cooking and Food Preparation.</p> <p>Food Fusion - Practical: bridge/claw techniques</p> <p>Washing up Evaluation of Fruit Fusion: Star profile - intro to the grill.</p> <p>Pizza Toast: Practical The Science of Food</p> <p>The Cooker and the methods of cooking</p> <p>Rock buns: practical</p> <p>Nutritional Needs & lifestyle choices</p> <p>Food provenance</p>

	<p>Polymer additives and identification symbols</p> <p>Mixed fibres.</p> <p>Ethical sourcing of raw material.</p> <p>Contextual Mini NEA Project</p>		<p>Fibre boards</p> <p>Regenerated fibres.</p> <p>Non-woven fabrics.</p> <p>Contextual Mini NEA Project</p>	<p>Knitted Fabrics.</p> <p>Contextual Mini NEA Project</p>	<p>knowing where food is grown, caught or raised. knowing how food was produced. Knowing how food was transported).</p> <p>Diet and Good Health: compare & contrast smoothies</p> <p>Smoothies: Practical</p> <p>Principles of nutrition</p> <p>Macro - Micro nutrients</p>
Assessment					