

## Year 7 Design and Technology

During KS3 design technology students experience a range of 'design & make' activities via a carousel, using both resistant materials: wood, metal and plastic and also compliant materials such as food, textiles and card. All technology projects involve analysing problems and producing design solutions. These could be either models or real products. Students use computers, graphic and CAD/CAM software to enhance their design work and manufacture high quality products.

### Methods of deepening and securing knowledge:

<b>Retrieval practice</b>	Theory and practical sessions are used as opportunities to revisit prior learning. Before students embark on any new project, they are reminded of the links to the key theory covered in the course. Students will frequently revisit theory and skills they have used in previous tasks, building knowledge through questioning and further application of tasks. The practical work itself allows students to apply their prior learning in real-life contexts, which helps to secure students' understanding.
<b>Elaboration</b>	Through exciting new projects students are able to elaborate on new making methods and techniques to extend skills further.
<b>Concrete examples</b>	Demonstrations are used to consolidate understanding of processes and techniques.
<b>Knowledge organisers</b>	Knowledge organisers are used to inform students of the skills and techniques used throughout the project and develop research skills needed in the tasks.

## Theme 1

### Topic(s)

#### **Spatula**

Students will design and make a wooden spatula. Students will analyse existing spatulas and produce a number of designs using their research. Students will model their best idea and then create their spatula design using a range of traditional manufacturing techniques.

- Ergonomics/ anthropometrics
- Sustainability and the environment
- Health and safety/ Risks/ Hazards
- Resistant materials tools and equipment
- Sources and origins of wood materials
- Properties of hardwoods and softwoods
- Surface finishing processes
- Marking and measuring
- Use of templates
- Use of tools equipment and processes- cutting, shaping and manipulation
- How to research
- Quality control
- Finishing techniques
- Production planning
- Evaluating work

## Theme 2

#### **Textiles - Day of the Dead/ Food**

##### Textiles-

Students will design and create a Day of the Dead textiles fabric sample. Students will research the cultural festival of 'Dia De Los Muertos' looking into social, religious and cultural aspects of the festival. Students will use a themeboard to inspire the surface decoration of a screen printed skull design. Students will then look at how this could be used as an applique on a variety of existing products.

##### Food -

The food unit is designed to review and build on KS2 experience. Starting with Food hygiene and safety, Provenance of fruit, Eatwell guide and basic nutrient groups, Heat transfer and basic practical skills. Students will learn knowledge and skills and apply this to a design and make end of unit assessment.

##### Textiles

- Health & Safety / risks / hazards
- Research techniques and information presentation
- Decorate techniques
  - Fabric pens
  - Fabric pastels
  - Stencilling
  - Flat & raised fabric paints
  - Hand embroidery
  - Screen printing
  - Haberdashery embellishment
- Fabrics and fibres
- Existing products research
- Quality control
- Evaluation
- Peer assessment

##### Food

- Health & Safety Risks and control
- Basic Knife skills
- How food cooks (heat transfer)

		<ul style="list-style-type: none"> <li>• Basic nutrition</li> <li>• Senses</li> <li>• Design and make a healthy snack - introduction to designing, planning and evaluating</li> </ul>
Assessment	Assessed against relevant elements in the individual student tracking sheets: research, designing, making and evaluation across B to P criteria. Allows for some overlap to allow progression. Includes end of year assessment task.	Assessed against relevant elements in the individual student tracking sheets: designing, making, evaluation, technical knowledge and cooking and nutrition across B to P criteria. Allows for some overlap to allow progression. Includes end of unit assessment task.
CEIAG <i>(Careers that are linked to that topic)</i>	Careers and Jobs in model making.	Careers and jobs in the carnival and festival industry. Textiles designer. Nutritionalist.

	Theme 3	Theme 4
Topic(s)	<p><b>Mini Torch</b></p> <p>Students will make a Mini Torch using a number of different manufacturing techniques. Students will also look at different types of electronic components/symbols and how they can be used to form a circuit diagram. Students will use soldering techniques to attach electronic components to a PCB (Printed Circuit Board). Students will also analyse packaging and create their own for their assembled mini torch.</p> <ul style="list-style-type: none"> <li>• Ergonomics/ Anthropometrics</li> <li>• Electronics/ Electrical Principles</li> <li>• Circuit symbols</li> <li>• Circuits diagrams</li> <li>• Soldering Equipment and uses</li> <li>• Resistors and resistor values</li> <li>• Health and Safety when soldering</li> <li>• Types of packaging</li> <li>• Tone and texture principles</li> </ul>	<p><b>CNC Mobile Phone Holder</b></p> <p>Students will make a Mobile Phone Holder using a number of CNC/CAD/CAM manufacturing techniques. Students will also look at types of polymer and how they can be manufactured. They will then use all the separate components they have manufactured to construct/assemble their mobile phone holder.</p> <ul style="list-style-type: none"> <li>• Sources and origins of materials- polymers</li> <li>• Different categories of polymers</li> <li>• CAD, CAM, CNC</li> <li>• How polymers are made</li> <li>• Sustainability and the environment</li> <li>• Quality control and its importance</li> <li>• CNC/ automation and how it is used to build the world around us</li> <li>• How manipulate and shape polymers</li> <li>• Different methods of fixing materials</li> </ul>

	<ul style="list-style-type: none"> <li>• Use of the vacuum former</li> <li>• Circuit manufacture</li> <li>• Applying tone/ texture/ Colour</li> <li>• Use of ICT/ CAD in industry</li> <li>• Using a Design Brief and Design Problem</li> <li>• Using circle maps to create a Task Analysis</li> <li>• Producing a Product Analysis</li> <li>• Producing a Design Criteria</li> <li>• Use of computers to design packaging graphics</li> <li>• Evaluating work</li> </ul>	
Assessment	Assessed against relevant elements in the individual student tracking sheets: research, designing, making and evaluation across B to P criteria. Allows for some overlap to allow progression. Includes end of year assessment task.	Assessed against relevant elements in the individual student tracking sheets: research, designing, making and evaluation across B to P criteria. Allows for some overlap to allow progression. Includes end of year assessment task.
CEIAG <i>(Careers that are linked to that topic)</i>	Jobs in Graphic Design.	Careers and Jobs in plastic manufacturing.

### Independent Study

Students in Year 7 have access to the course materials through Google Classroom. Independent study is accessible through this platform and is given either each week or once a fortnight. Independent study is generally used to secure prior learning through practice to develop confidence and memory.