

D&T Curriculum Maps

Years 7-10

Clifford Holroyde 2023-24



Department
for Education

Design and technology programmes of study: key stage 3

National curriculum in England

Pearson BTEC
Tech Award Level 1/2 in

Construction and the Built Environment

Purpose of study

Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

Aims

The national curriculum for design and technology aims to ensure that all pupils: develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users critique, evaluate and test their ideas and products and the work of others understand and apply the principles of nutrition and learn how to cook.

Attainment targets

By the end of key stage 3, pupils are expected to know, apply and understand the matters, skills and processes specified in the programme of study.

Subject content Key stage 3

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of domestic and local contexts [for example, the home, health, leisure and culture], and industrial contexts [for example, engineering, manufacturing, construction, food, energy, agriculture (including horticulture) and fashion].

When designing and making, pupils should be taught to:

Design

- use research and exploration, such as the study of different cultures, to identify and understand user needs.
- Identify and solve their own design problems and understand how to reformulate problems given to them.
- Develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations
- Use a variety of approaches [for example, biomimicry and user-centred design], to generate creative ideas and avoid stereotypical responses.
- Develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools.

Make

- Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture.
- Select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties.

Evaluate

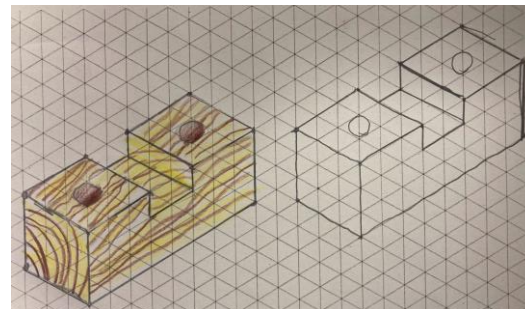
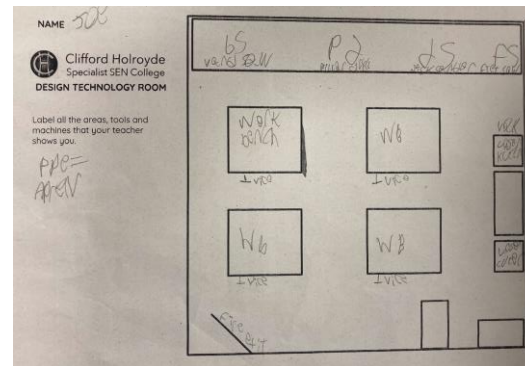
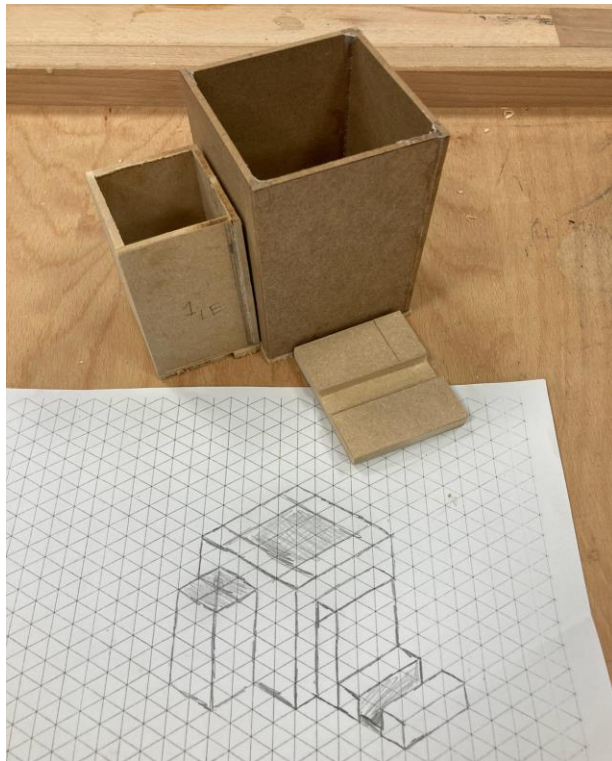
- Analyse the work of past and present professionals and others to develop and broaden their understanding.
 - Investigate new and emerging technologies.
- Test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups.
- Understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists.

key stage 3 Technical knowledge

- Understand and use the properties of materials and the performance of structural elements to achieve functioning solutions.
- Understand how more advanced mechanical systems used in their products enable changes in movement and force.
- Understand how more advanced electrical and electronic systems can be powered and used in their products [for example, circuits with heat, light, sound and movement as inputs and outputs].
- Apply computing and use electronics to embed intelligence in products that respond to inputs [for example, sensors], and control outputs [for example, actuators], using programmable components [for example, microcontrollers].

Class 1:

We have been looking at Health and Safety within a workshop and ensuring all students have access to all hand tools and machinery in a safe and well being manner. With regards to our knowledge learning the students have been designing and making a variety of products using a vast array of tools and methods. The main focus has been on Thermoplastics and how they are shaped and formed along with woods and how they are shaped and joined. Below are some pics of the products designed and made in acrylic (Thermoplastic), pine (softwood) and MDF (manufactured board)



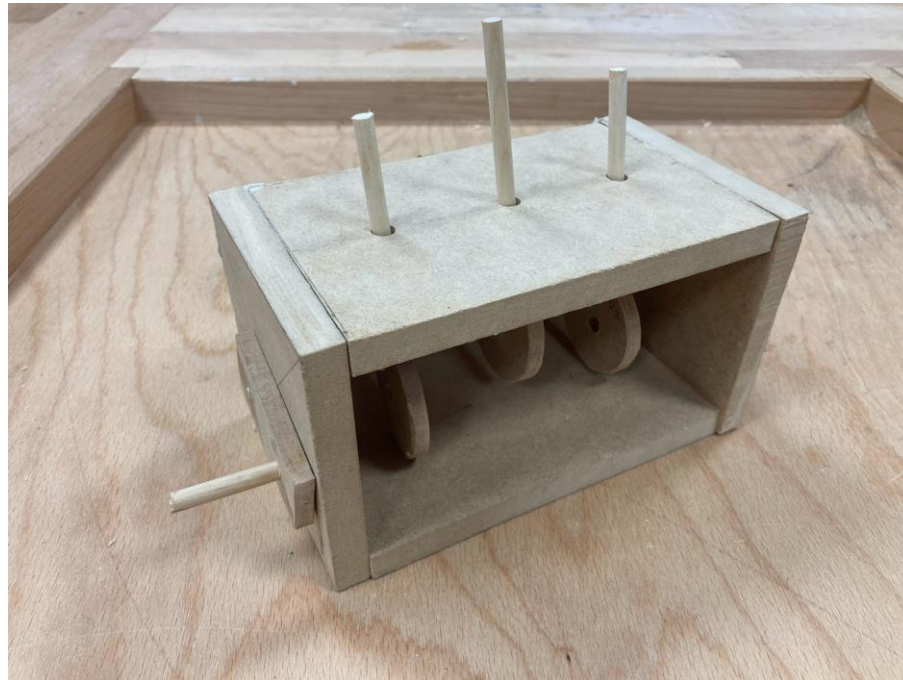
Class 2:

We have been looking at Health and Safety within a workshop and ensuring all students have access to all hand tools and machinery in a safe and well being manner. With regards to our knowledge learning the students have been designing and making a safe keep / jewellery box using a variety of woodworking tools. The main focus has been on woods and how they are used to produce structures to not only store items in but how we can use them to make a product we can live in Below is an example of a (yet to be finished) safe keep box made from a softwood, using comb/finger joints with a push fit lid (students can also learn how to produced a hinged lid) to store items in.



Class 3&4:

We have been looking at Health and Safety within a workshop and ensuring all students have access to all hand tools and machinery in a safe and well being manner. With regards to our knowledge learning the students have been designing and making a mechanical toy using a wide variety of woodworking tools and machines. The main focus has been on the mechanical parts that make up a working mechanical outcome. Below is an example of a (yet to be finished) mechanical toy made from MDF, the parts that have been made so far are, the carcass (box to house the mechanism) the lever, linkage, cams and followers.



Ks4:
We have been looking at Health and Safety within a workshop and ensuring all students have access to all hand tools and machinery in a safe and well being manner. With regards to our knowledge learning the students have been focusing on a Carpentry and Joinery unit looking at materials, tools and processes used in the joinery trade. Students in their learning have produced a number of products which they can use both in their lessons and, if they choose to take them home, at home to complete simple joinery tasks. Below is an example of a set of products produced so far.





Ks4 Pics of a bench made by two students for the local army cadets group and a small bedside table made by Ellis Parr. Both using frame joints (Mortice & Tenon and Bridal) which is a focus area for students this term