



Curriculum Overview

Year 7 – Design & Technology 2021-2022

Rationale for Year 7 Design & Technology

In each year, the units of work aim to introduce students to wider designing issues alongside their designing and making. All projects have a different focus. Some projects are mostly designing; some mostly making and some are design and making. Because knowledge is context dependent, all projects have a focus of specific knowledge within them. Simplistically, the detail in which the students can conceptualise the abstract concept of design will increase over time. Across each unit and over the key stage three students will be expected to apply more detail to their designing so that in GCSE the students are able to consider the wide ranging effects of design on society.

The students will study two nine week, nine hour modules of Design & Technology (DT) in Year 7. In each module, they will complete around four hours of independent work during homework time. These modules are studied by different populations of the school at different times in the year based on their position in a carousel that is shared with Food Preparation and Nutrition.

The two modules introduce the students to a socialisation of working safely in a workshop and the knowledge of working with tools and “resistant materials”. The students are also introduced to working with “compliant materials” as part of a systems project. The two modules aim to teach both the traditional approach associated of the subject and to introduce modern practice through designing with biomimicry and exploring the technology of programmable circuits.

What will students learn and why?

Unit One: Working with wood. The students learn about marking up, holding materials, wasting processes and finishes. They learn some basic design and research, and learn to take their knowledge of working in wood and apply to the context of designing a desk tidy.

To develop the skills and knowledge the students first learn how to mark, hold and cut timber. They learn the associated knowledge of tools, equipment and materials so that their capability to apply design thinking is developed from the very first lesson. The students then move onto the design of a desk tidy. They are shown examples of work from a small range of designers and they are encouraged to consider the design outcomes through the lens of a designer whose work has inspired them the most. The design and making of a desk tidy uses the same skills as the dice but with the progression of cutting up and joining of pieces of materials to specific shapes and sizes based on the students own designs.

Unit Two: Modern design approaches. The students will learn about systems design. They will learn about inputs, mechanisms and outputs. This is essential underpinning knowledge for anybody seeking to understand how everyday mechanical systems might work. The learning then progresses to understand how levers and linkages work in simple mechanisms. Students then learn how to use biomimicry to inspire their own designing to solve a real life contextual problem.

Students are taught modelling skills in compliant materials to iterate their ideas so that they can iterate their mechanism designs to solve a real life / complex problem on a “mission to mars contextual theme”.

In a later part of the module, they are taught how to use a Programmable Circuit such as BBC Micro: Bit, which they then learn how to programme to solve contextual problems. This then interleaves against the initial biomimicry segment of the project where the student learn how mechanical systems can be controlled through automation.

How will students learn?

The sequence of lessons involves the students having lessons at the start of the sequence that are more focused towards “traditional / teacher led instruction” whereas the students are involved in an “I do, we do and you do” methodology. As the sequence continues, teachers then use “Fading” to reduce their presence in the students learning activities so that we teach the students the metacognition of independence in their work. Each 12 week unit of work would be split into 3 or 4 week sequences and therefore, with the full module there would be an “ebb and flow” of periods whereas T&L varies from explicit teacher led to student independence.

How will students be assessed?

Knowledge and Design practice booklets are being rolled out across the KS3. Assessment will be built into the booklets with teachers assessing specific pages in the booklet every 3 to 4 lessons. The work is assessed against a standards system and comparative judgement is used to better identify students’ strengths and weaknesses across different assessed pieces of work in the different module contexts.
Regular online quizzes spaced throughout the module will assess the extent of students’ knowledge and give them opportunity to better understand the depth of their learning.

What is the aim for learners by the end of the year in comparison to the previous year?

In primary education, the students are not likely to have worked in a workshop environment. The students are likely to have used programmable circuits in some form and almost certainly will have used “Scratch”, which is the proprietary software on which the circuits are programmed.
The Year 7 DT units aim to give students both an experience in working in a workshop with tools and equipment but also with the biomimicry themed mechanisms project, we hope to ensure the frequent student question is not “what are we making today?” to “what are we designing?”