| *2024-2025* | **Yr7** |
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| **KS3 Creative Carousel Technology Rotation (20 lessons per rotation)** | **20 Lessons** |
| **Learning** | Pupils will undertake 2 projects within Yr7 which will cover learning areas such as :<br>- Working with Hardwood, Softwood and Man made Board.<br>- Working with Papers and Boards<br>- Research and exploration, such as the study of 60s Design.<br>- The use of Cad / Cam in modelling and development<br>- The key principles of Graphic design<br>- The importance of Packaging in product design and related environmental issues<br>- Workshop skills such as measuring, marking, tool selection, material processes and Health and Safety. |
| **Concepts** | The Design Process / Material properties specifically Papers, Boards and<br>Woods / Sustainability including recycling / Functionality and Aesthetics / Drawing and CAD / Prototyping and Modelling / Basic Manufacturing Techniques / Basic Health and Safety / Evaluation and Testing. |

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| **What is needed to master the knowledge** | Pupils will need to :<br>* Understand the basic difference between Hardwoods and Softwoods.<br>* Be able to evaluate material properties when selecting woods for different applications<br>* Consider the aesthetic implications of different wood types<br>* Be aware of the cost of utilising different wood types<br>* Understand the basic process of producing Man made Boards<br>* Understand the role of CAD/CAM in modern production processes<br>* Be aware of the importance of modelling when developing products<br>* Understand the role of graphics in brand identity<br>* Recognise the use of papers and boards when designing packaging<br>* Be aware of the Environmental implications of different wood types<br>* Produce a practical outcome to demonstrate the Wood working concepts learned. |
| **Common Misconceptions** | Literal definitions of Hard and Soft in relation to Wood types / Confusion in subject specific terminology / Lack of understanding of specific wood properties and their suitable uses / not recognising the common source of papers and softwoods / Unaware that the design process is a systematic way of designing rather than an inspirational process /Unaware that modelling is an intrinsic and important part of product design / Students may believe that more complex designs are better than simpler or more elegant solutions / Many students believe that DT is solely about crafting or manual tasks, like making objects with their hands / pupils might think that all types of wood are the same in terms of hardness, workability, and appearance /some stdents might think that glue alone is sufficient for all joints/ pupils might think that wearing PPE, like goggles or aprons, is not necessary. |

# Yr8

## 20 Lessons

Pupils will undertake 2 projects within Yr8 which will cover learning areas such as :

- Working with Ferrous metal, Non ferrous and Alloys
- Research and exploration, such as the study of typography and textile design
- The use of Cad / Cam in modelling and development
- The key principles of Mechanical action
- the use of linkages and cams to control motion
- The importance of recycling and related environmental issues
- Workshop skills such as casting, marking, tool selection, material processes and Health and Safety.

The Design Process / Material properties specifically Metals and Alloys / Textiles / Sustainability including extraction and recycling / Typography and Aesthetics / Mechanisms and Movement / Drawing and CAD / Developing Prototyping and Modelling / Broader Manufacturing Techniques / Health and Safety awareness / Evaluation and Testing.

Pupils will need to :
* Understand the basic difference between Ferrous, non ferrous and Alloy Metals
* Be aware of the process of material extraction and processing
* Consider the reasons behind combining Metals to form Alloys
* Be able to describe the advantages of Alloy Metals and their properties
* Understand the role and application of metal processes such as casting
* Understand the role of CAD/CAM in modern production processes relating to metals
* Be aware of the importance of modelling when developing products
* Be aware of natural and man made sources of textiles
*Be able to implement basic textile processes
* Understand the basic concept of Typography and Font design
* Produce a practical outcome to demonstrate the Metal working concepts learned.

Misconception that all metals Rust / Confusion between Rust and Oxidisation / Lack of understanding that Metals can be protected from rusting / Belief that all Alloys are only found on car wheels / Unaware that motion can be controlled and changed in very specific ways / Textiles are both natural and man made / confusion over terminology and meaning /Some students might see prototyping as unnecessary, believing that their initial idea is good enough / Some students think that DT doesn't involve academic skills like maths, science, or history / a belief that DT is easier than other subjects like math or science / students may believe that metals are always used alone and cannot be combined with other materials / some students may believe that soldering and welding are the same process or be unaware of these processes entirely.

# Yr9

## 20 Lessons

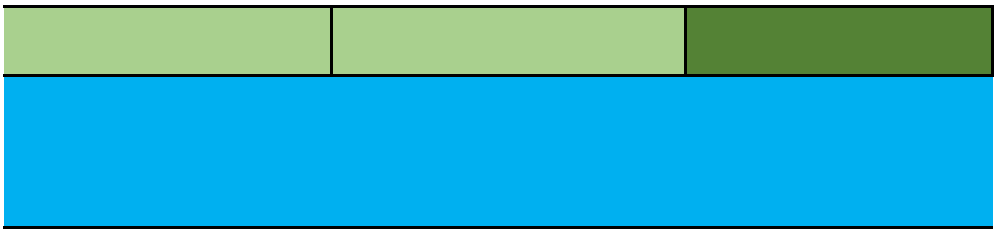
Pupils will undertake 2 projects within Yr9 which will cover learning areas such as :

- Working with Polymers such as Thermoset and Thermoforming plastics
- Research and exploration, such as the study of shape and form in 3D Design
- The use of Cad - Cam / virtual modelling and development
- The key principles of electronics in action
- The importance of renewable energy and related environmental issues
- Workshop skills such as heat forming, marking, tool selection, material processes and Health and Safety.

The Design Process / Material properties specifically Thermoplastics / Electronics / Sustainability including fossil fuel extraction and recycling / Aesthetics and form / Electronic components / Drawing and CAD / Developing Prototyping and Virtual modelling / Advanced Manufacturing Techniques / Health and Safety in different situations / Critical Evaluation and Testing.

Pupils will need to :
* Be aware of the process of Polymerisation and it's associated products.
* Be able to evaluate the environmental drawbacks of producing materials from Fossil fuel sources
* Be able to describe the advantages of Polymers in production processes
* Be aware of the limitations of thermoplastics for particular workshop processes
* Understand the role of CAD/CAM in modern production processes relating to plastics
* Be aware of the importance of virtual modelling when developing electronic products
* Understand the basic concept of Pattern and Tessellation
* Recognise how basic circuits function and how they can be modified for specific purposes
* Produce a practical outcome to demonstrate the Plastic working concepts learned.

Belief that there is only one type of Plastic / Confusion over the word "Polymer" / Confusion over the source of plastics / lack of awareness of the environmental consequences of high plastic use / Belief that virtual modelling is unrelated to real life applications / some students believe that adding more components (like resistors, capacitors, or LEDs) will automatically improve a circuit / confusion over terminology and meaning / thinking that evaluating a product is purely subjective, based on personal opinion /pupils might think there is only one correct solution to a design problem / students sometimes think that different materials can be substituted easily without affecting the outcome / students might assume that breadboards are used for permanent circuit setups rather than rapid prototyping



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