

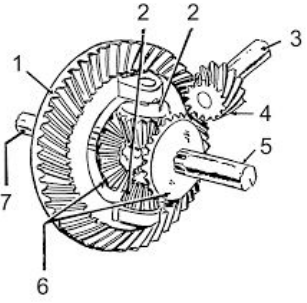
# Year 10 D&T Learning Journey

## Sustainability

You will look at how to be sustainable including renewable energy, 6 R's, Carbon Footprint and a life cycle assessment.

**Unit 1**

This first project is practice for your final NEA which you will begin at the start of June.



## Initial ideas

You will create a range of design ideas influenced by your research



## Electronic systems

You will develop an understanding of simple circuit components and processes.



## Manufacturing of final outcome

Further developing your manufacturing skills



## Evaluation

You will evaluate against your design specification, client and third party feedback

## Lighting Project



## Research

You will research your client and create a product analysis and design specification to inform your ideas.



## Development

You will develop your ideas through prototyping and modelling.



## Soldering

Soldering the components onto a PCB for your colour changing light.

**Test**



**Unit 2**



## Hydraulics and pneumatics

Develop and understanding of these and the different types/usage



## Linkages

Develop and understanding of these and create an interactive resource



## Movement

Develop and understanding of these and the different types/usage

## Mechanical devices and energy storage

**Test**



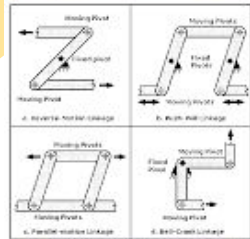
## Energy storage

Develop and understanding of how energy is stored (kinetic and potential)



## Lever

Develop and understanding of these and the different types/usage.



**Unit 3**



## Properties

To demonstrate your knowledge of material properties by performing a range of tests.



## Wooden desk organiser - Research

To produce a range of research to inform your ideas such as, a client profile, design brief and design specification.



## Wooden desk organiser - Evaluate

To evaluate your final desk organiser against your design specification and client profile.



## Woods

To further your existing knowledge of this topic



## Wooden desk organiser - Ideas/development

To generate ideas for your wooden desk organiser and develop them through prototyping.

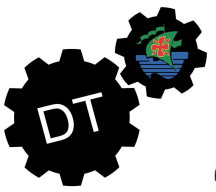
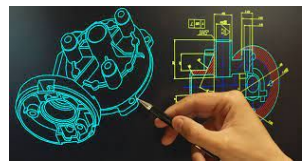


## Wooden desk organiser - manufacture

To manufacture your wooden desk organiser using hand tools and accuracy.

**Test**

# Year 10 D&T Learning Journey



**Polymers**  
To further your existing knowledge of this topic through research tasks.



**Polymer processes**  
To identify and develop an understanding of injection, rotational and blow moulding. Recap vacuum forming.



**CAM and manufacturing**  
To understand the commercial manufacturing process of laser cutting and to also assemble your thermoplastic animals through strip heating of acrylic.

**Unit 4**

**Polymer foldable animal**



**Design and develop**  
To generate design ideas for your 3D animal and prototype a final design



**CAD development**  
To recap your understanding of CAD through the development of your animal design on 2D software.

**Test**



**Product analysis**  
To research and evaluate a range of existing products to inspire your ideas.



**Client profile**  
To generate a client profile for your chosen client and explore their product requirements.

**Unit 5**

**Begin final NEA**



**Design specification**  
To generate a range of statements which your product must and should adhere to.



**Design brief and problem**  
To generate a design brief in response to your design problem.

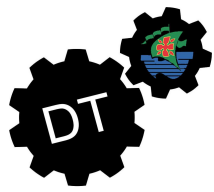


**Contextual challenges**  
To explore this years three contextual challenges.

**Continue NEA into year 11**

Iterative Process Model





# Product Design Y11 Learning Journey

Section C (20 marks)



Generating a range of design ideas to solve your problem

**GCSE**  
50% EXAM  
50% NEA

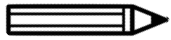
**NEA - Non Exam Assessment**

**Term 1**

**NEA - Design and make prototypes that are fit for purpose**

**Trial Exam**

**Teacher feedback**  
General feedback will given



**Initial design ideas**  
To create a range of initial design based upon your research so far.

**Section D (20 marks)**

Developing product, modelling and CAD work



**Development**  
You will develop your ideas through prototyping and modelling.

**Documenting your models as you go**

**Cutting and components list**  
What you will need to manufacturer your final outcome

**Trial Exam**

**NEA - Design and make prototypes that are fit for purpose**

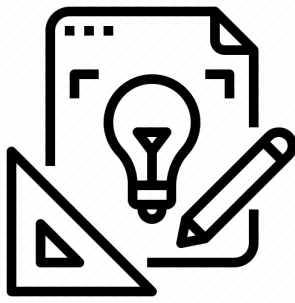
**Material research**  
You will research a range of materials to help manufacture your final outcome based on the properties

**Section E (20 marks)**  
Realising your design ideas  
Testing materials, processes, finishes and joining methods

**Manufacture specification**  
A plan of how you are going to make your final outcome

**Manufacturing of final outcome**  
Manufacturing mainly on CAD/CAM and assembly in the workshop

Ongoing evaluation and analysis throughout your coursework, through summaries and client feedback

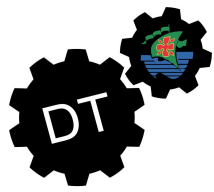


**NEA - Analyse and Evaluate**

**Testing of final product**  
Test your final outcome based on strength, waterproof, durability

**Section E (20 marks) Evaluation**  
You will evaluate against your design specification, client and third party feedback

**Modifications**  
explained how it could be modified further so it can be commercially viable



# Product Design Y11 Learning Journey

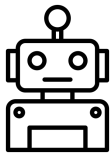


**Energy generation and storage**  
Renewable and non-renewable energy

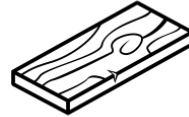
**New materials**  
You will recap modern materials, smart materials, composite materials and technical textiles

**Term 2**

**Revision** Core technical principles



**New and emerging technologies**  
The impact of Industry, enterprise, sustainability, environment, society, people and culture



**Materials and their working properties**  
You will recap your knowledge of papers and boards, timber, textiles polymers and metals

strength  
hardness  
toughness  
malleability  
ductility  
elasticity

The work of others

Stock forms, types and sizes



## Using and working with materials

You recap properties of materials, the modification of properties for specific purposes and how to shape and form using cutting, abrasion and addition

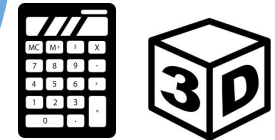


**Trial Exam**

Specialist technical principles



**Material management**  
In relation to **at least one** material category or system, you should know and understand the factors listed below.  
The use of production aids, tools, equipment and processes, how materials are cut shaped and formed, commercial processes, surface treatments and finishes



**10% Maths Drawing Techniques**

## Design strategies

You will recap how different strategies can be applied, including: collaboration, user centered design, a systems approach, iterative design avoiding design fixation.

Specialist techniques and processes

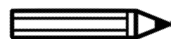
Designing and making principles

**FINAL EXAM**

## FINAL EXAM

Written exam: 2 hours  
100 marks  
50% of GCSE

Communication of design ideas



## Cut materials efficiently and minimise waste

You will recap the importance of planning the cutting and shaping of material to minimise waste eg nesting of shapes and parts to be cut from material stock forms.

