Unit 7

The Dean Trust
Believe Achieve Succeed

7a - Analyse That!

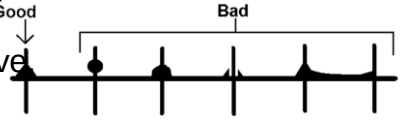
Product Analysis is the process of carefully studying a product to understand its features, such as how it works, what it looks like, and its size, in order to learn from it and improve future designs

Product disassembly is taking a product apart to see what materials, components, fixings and manufacturing techniques have been used. This is useful for a designer to understand design decisions made for existing products.

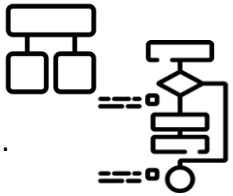
7b - Complex Circuits

Soldering is the joining of two metal surfaces with the use of another metal called solder. Soldered joints keep components in place alongside allowing electricity to run through it.

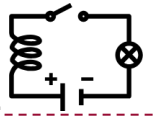
To solder heat part & pad 2-3 sec, then add solder, continue heating for 1-2 sec then remove. A perfect solder joint looks like a mountain peak.



Block Diagram
A block diagram shows the main parts of a system as simple boxes.

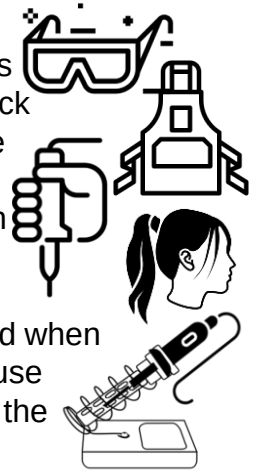


Circuit Diagram
A circuit diagram shows how electrical parts are connected using symbols.



Flowchart
A flow chart is a diagram that shows the steps in a process.

Health & Safety for Soldering



- Always wear safety goggles
- Always tie any long hair back
- Always wear an apron & tie the apron at the back.
- Only hold the soldering iron handle, never touch the soldering irons nib
- Use the soldering iron stand when the soldering iron is not in use
- Frequently clean the nib of the iron on the damp sponge

Product Testing is figuring out what a product is, how it is made, or how well it works. Testing a product focuses on its functions and how it responds in use.

7c - Nightlight

ACCESS FM is a design tool used to write design specifications and analyse products.

Design Specifications are written by designers to aid the design process by telling them what must, should and could be included within their design. A design specification works like a checklist of criteria that needs to be followed in order to achieve the desired outcome.

A is for **Aesthetics**
C is for **Cost**
C is for **Customer**
E is for **Environment**
S is for **Size**
S is for **Safety**
F is for **Function**
M is for **Material**



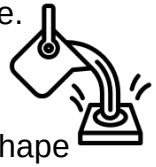





Aesthetics - refers to the looks of a product
Cost - the price of the product to buy & make
Customer - who is the target market for the product e.g. age ranges, interests, hobbies
Environment - what are the environmental impacts of the product, positive & negative
Size - what are the dimensions of the product
Safety - safety features or risks of a product
Function - what does the product do, how does it work, how is it functional
Material - what materials have been used & why

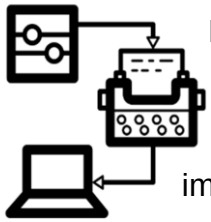
Composite
A material made from two or more different types of materials. When combined they create a new material with improved properties.

Casting
Pouring a liquid into a mould to make a solid shape.



Mould
A hollow shape which can be used to form materials

7d - Mobile Phone



Product evolution is where a product evolves in terms of features, functionalities, quality, technology and environmental impact to meet new modern needs.

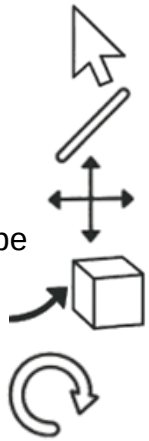
- **3rd April 1973** - The world's first mobile phone call is made.
- **90's** - Developments in design and portability including size.
- **00's Part 1** - Arrival of bigger screens in full colour & microprocessors
- **00's Part 2** - Arrival of Apple Iphone & the truly connected smartphone.
- **2010's** - We now have a mobile computing device in our pocket connected to the World Wide Web!

Unit 8

The Dean Trust
Believe Achieve Succeed

8a - Grand Designs

Sketchup Tools



Select Tool: Choose and highlight objects.
Line Tool: Draw straight lines for shapes.
Rectangle/Circle/Polygon Tools: Quickly create 2D shapes.
Push/Pull Tool: Pull a 2D face into a 3D shape (or cut into it).
Move Tool: Shift, copy, or stretch objects.
Rotate Tool: Turn objects around a point.
Scale Tool: Resize objects bigger or smaller.
Offset Tool: Create parallel shapes and outlines.
Orbit/Pan/Zoom Tools: Look around and move your view.
Paint Bucket Tool: Add colours, textures, or materials.
Eraser Tool: Remove edges or tidy up shapes.

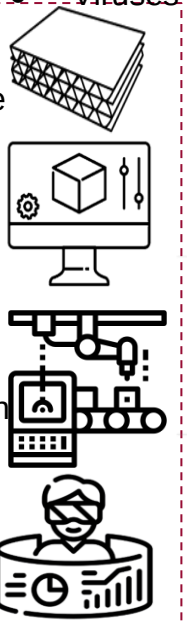
Advantages of CAD

- Saves time compared to drawing by hand.
- No need to build lots of test models.
- Can test designs on the computer (e.g. strength, fit, cost).
- Cheaper than making prototypes. Easier and quicker to change designs.
- Lets you try out many different ideas before choosing the best one.

Disadvantages of CAD

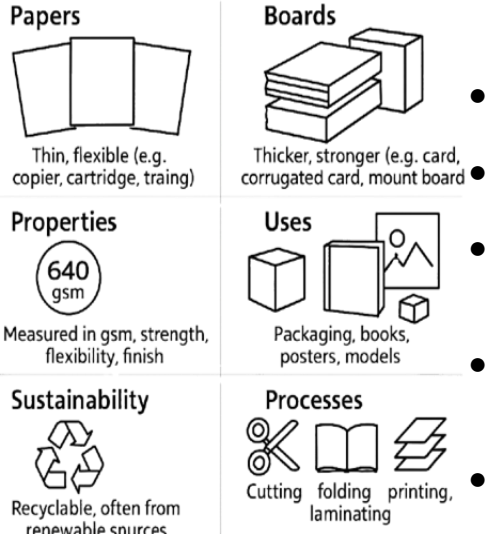
- Software and computers are expensive.
- Training people to use CAD takes time and money.
- Work can be lost if the computer crashes.
- Files can be hacked or changed.
- Viruses can damage software or data.

8b - Advanced Modelling



Designers make models to explore and test ideas, make improvements, and communicate before making the final product.
Physical Models: Made from materials like cardboard, foam, clay or styrofoam.
CAD: Virtual models created with software such as Onshape, TinkerCAD or SketchUp.
CAM: Hardware like 3D printers or laser cutters that turn CAD designs into physical models.
Advanced Modelling: Uses technologies such as Virtual Reality (VR) and Augmented Reality (AR) alongside CAD and CAM

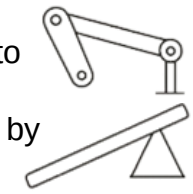
8c - Mechanical Promotional Display



Paper and Boards

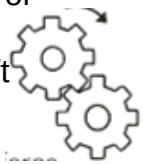
Mechanisms

Mechanisms change the speed, force, or direction of movement:

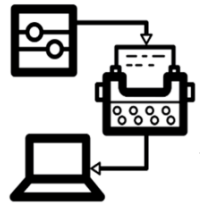


- **Linkages:** Use rods and pivots to transfer motion (e.g. scissors).
- **Levers:** Give a force advantage by using a pivot (fulcrum).
- **Cams and Followers:** Change rotary motion into up-and-down (reciprocating) motion.

- **Gears:** Transfer rotary motion; can speed things up (driver gear larger) or increase force (driver gear smaller).
- **Pulleys:** Use wheels and belts to lift loads or transfer rotary motion.



8d - Evolution and The Future:



Product Evolution

Products change over time to improve features, quality, technology, and environmental impact. They evolve to meet modern needs.

Technology Push

New technology or inventions come first. Companies then find ways to make products using that technology. (e.g. touchscreen technology → smartphones)

Market Pull

Customers want or need something new. Companies design products to meet that demand. (e.g. demand for eco-friendly bottles → reusable metal bottles)

Unit 9

The Dean Trust
Believe Achieve Succeed

9a - Food Standards

Food Standards relate to the quality, composition, labelling, presentation and advertising of all food and of materials in contact with food. They are responsible. for protecting public health in relation to food.

Some examples of Food Standards

- Assured Food Standards - more commonly known as the Red Tractor logo
- British Lion Mark - shows products are safe to eat
- The Leaf Initiative - used to protect the countryside

9b - Chilled Ready Meals

Ready meals refers to pre prepared convenience food, these are meals found in the chilled section of supermarkets that don't need much preparation or cooking but do need some form of heating.

Benefits of ready meals for consumers

Convenience- it is easy to just pop a meal into the microwave & be eating it in a short space of time

Cost - money is saved as you do not have to buy all the ingredients individually to make the meal.

Time - time is saved by eating ready meals and not preparing food from scratch

Portion size - each dish is broken down to a specific portion size

Nutritional Profiles

Nutritional profiles/nutritional profiling as it's also known, is the science of classifying or ranking foods by their nutritional composition in order to promote health.

A common use of nutrient profiling is in nutritional rating systems to help consumers identify nutritious food.

9c - Event Food

There are many different events where food is prepared and served. These include weddings, birthdays, christenings as well as music festivals and cultural events.

Event planners must consider a large number of different things including the **quality assurance** of the food, the types of **consumers** attending the event and they must have **contingencies** in place to ensure everyone's **dietary needs** are met along with a plan in case something goes wrong.

Packaging

Packaging for the food must functional. It must be robust enough to hold the food being served but should must also be produced in a way that is environmentally friendly. Ideally the packaging used should be recyclable or reusable.

Factors to consider

- The type of customer/client at the event
- The style of food you will offer for the event
- Costings need to be worked out
- The facilities available
- The skills of the catering team
- Food safety and hygiene
- Catering for specific needs & requirements
- Food waste and sustainability

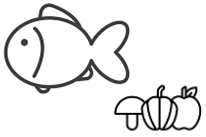
9d - Food Provenance - Where does our food come from?

To **produce** our food, farmers and others will do the following:

Grow a range of plants

Rear different animals for meat.

Catch fish or hunt game



Local – Food produced nearby.
Seasonal – Food available at certain times of the year.
Sustainability – Producing food without harming the environment.
Import / Export – Food brought in or sent out of the country.
Fair Trade – Food produced to support farmers and workers fairly.
Organic – Food grown without chemicals or pesticides.
Supply Chain – The journey food takes from farm to plate.