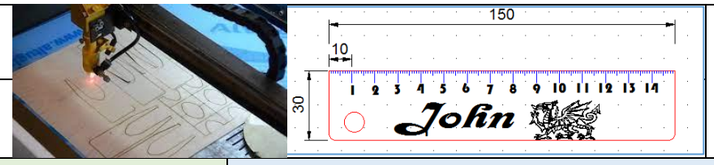
DESIGN TECHNOLOGY KNOWLEDGE ORGANISER

Topic: CAD/CAM Ruler Project



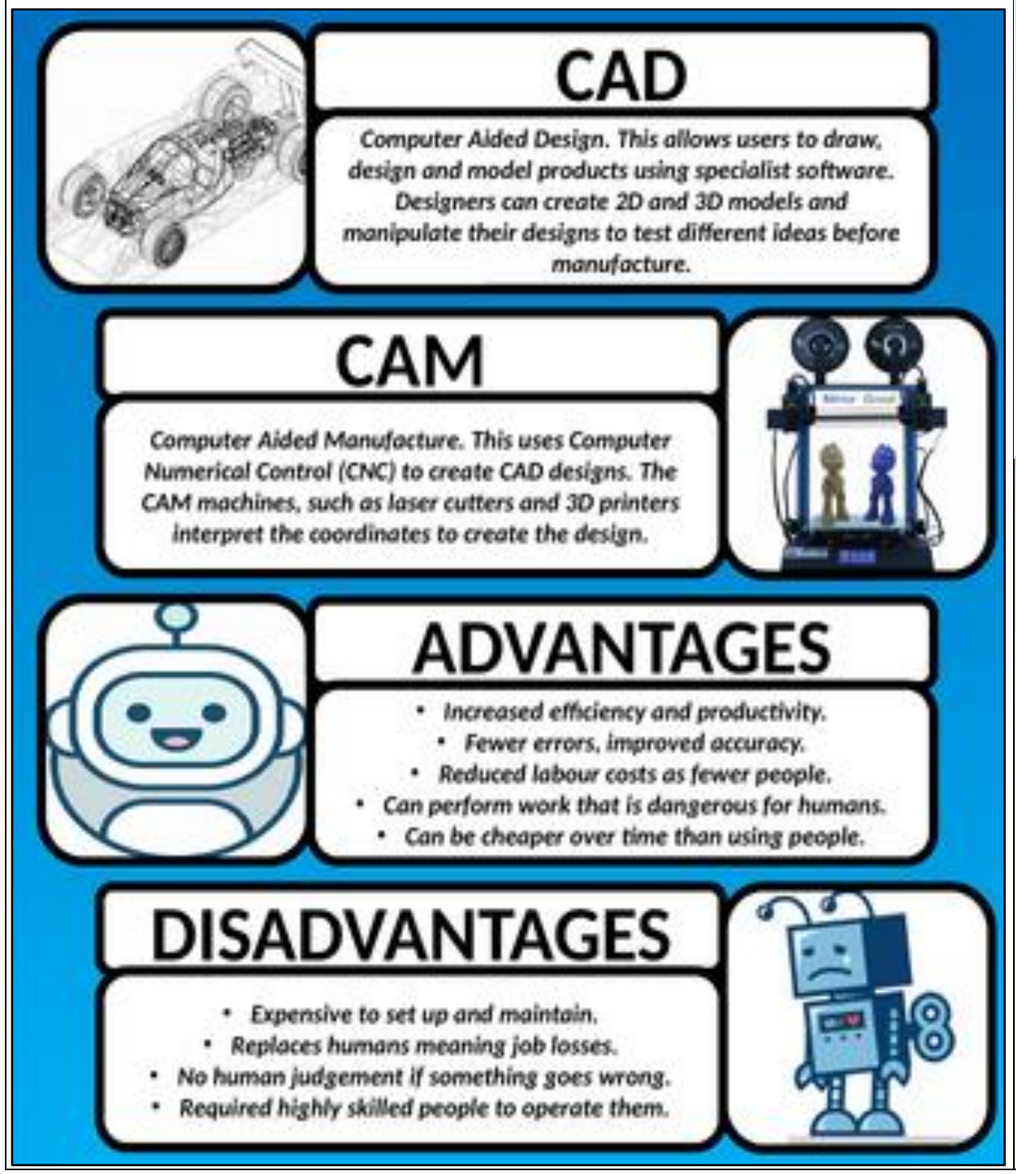
YEAR 7 DT

Computer aided design - CAD

Design software such as 2D design or Sketchup, allow the designer to draw a product in detail. Products can be designed and modified quickly. CAD allows for the testing of prototypes during the design process, without the need to make it.

Computer aided manufacture - CAM

Once a prototype design has been produced, it can be manufactured on a CNC machine or Laser Cutter. Computer Aided Manufacture (CAM) has meant that products and components can be made repeatedly to the same high standard.



Focused Topics

THERMOSETTING PLASTICS

THESE ARE PLASTICS THAT ONCE HEATED AND MOULDED, CANNOT BE REHEATED AND REMOULDED. THE MOLECULES OF THESE PLASTICS ARE CROSS LINKED IN THREE DIMENSIONS AND THIS IS WHY THEY CANNOT BE RESHAPED OR RECYCLED. THE BOND BETWEEN THE MOLECULES IS VERY STRONG.

UREA FORMALDEHYDE	SOME ADHESIVES (GLUES)	POLYESTER RESINS
POLYURETHANE	SILICONE	MELAMINE FORMALDEHYDE
BAKELITE	MELAMINE RESIN	DUROPLAST

THERMOPLASTICS

THESE PLASTICS CAN BE RE-HEATED AND RE-SHAPED IN VARIOUS WAYS. THEY BECOME MOULDABLE AFTER REHEATING AS THEY DO NOT UNDERGO SIGNIFICANT CHEMICAL CHANGE. REHEATING AND SHAPING CAN BE REPEATED. THE BOND BETWEEN THE MOLECULES IS WEAK AND BECOMES WEAKER WHEN REHEATED, ALLOWING RESHAPING. THESE TYPES OF PLASTICS CAN BE RECYCLED.

ACRYLIC (KNOWN ALSO AS PERSPEX)	POLYPROPYLENE (PP)	NYLON
POLYVINYL CHLORIDE (PVC)	LOW DENSITY POLYTHENE (LDPE)	
POLYSTYRENE	HIGH IMPACT POLYSTYRENE (HIPS)	TEFLON

Key Terms

Automation- Using automatic equipment in production – e.g. robots

Computer aided design (CAD)-The process of creating a 2D or 3D design using computer software.

Computer aided manufacture (CAM)-The manufacture of a part or product from a computer aided design (CAD) using computer-controlled machinery, such as a 3D printer.

Laser cutting- a technology that uses a laser to cut materials

Thermoplastic- types of plastic which become soft when they are heated

Tasks

Task 1: Create a mind map about CAD/CAM..

Task 2: Learn the key words and the definition.

Task 3: Create 6 questions that can be answered from the information on the knowledge organiser.

Task 4: Create a quiz based on task 1, 2 or 3. Get someone to test you.

Task 5: Create a mind map for the information you remember and red pen anything you've forgotten.

Task 6: Teach it. Create a task that can be used to teach some of the information from here.

To go further:

Introduction to 3D modelling: SketchUp

Precious Plastic - The basics of plastic