



Design and technology knowledge framework

Design knowledge	<ul style="list-style-type: none">• Design principles like aesthetics, functionality, ergonomics.• User-centred design approaches.• Prototyping and iterative design processes.• Accuracy in design.
Material knowledge	<ul style="list-style-type: none">• Properties of different materials.• Knowing how to select appropriate materials for a design based on their properties.• Sustainability considerations.• Knowledge of techniques for manipulating materials.
Process and practical knowledge	<ul style="list-style-type: none">• Techniques for cutting, shaping, joining materials.• Use of tools and machinery safely and effectively.• Digital design and manufacturing techniques e.g. CAD.• Knowing there has been development in creating techniques.
Technical knowledge	<ul style="list-style-type: none">• How structures and mechanisms work (levers, gears, pulleys, cams etc.).• Electrical circuits and components.• Knowledge of engineering concepts.• Knowledge of key pieces of technology that realise theory into outcomes e.g. cam toys, cantilever bridges.
Contextual knowledge	<ul style="list-style-type: none">• Social and cultural factors influencing design.• Environmental impact of product design and manufacturing.• Ethical considerations in design.• How society in the past and now is impacted by design.• Knowledge of key designers and movements in design e.g. Charles Rennie Mackintosh, De Stijl, Apple etc.
Disciplinary knowledge	<ul style="list-style-type: none">• The responsibilities of designers, engineers and technologists.• Understanding of the whole design process – research, plan, create, evaluate.• Designing to solve problems. Knowledge of the broad contexts for design technology problems: domestic, industrial, fashion, entertainment, agricultural, transport.• Taking into consideration the variables that have impact e.g. user needs, availability of materials, limitations.• Understanding that design is an iterative process.• Evaluate.

Through these strands of knowledge, pupils will learn declarative and procedural knowledge:

Declarative knowledge	The facts, concepts or principles that pupils need to know. Knowing what things are. Knowing how systems and products function.
Procedural knowledge	Knowing the processes, steps or procedures to follow to perform a task or solve a problem.