

# **Subject specific vocabulary**

The following subject specific vocabulary provides definitions of key Product Design terms used in our A-level Design and Technology: Product Design (7552) specification.

Your students should be familiar with, and gain understanding from, all these terms.

## **Active disassembly**

The use of components within a product (usually smart materials) that react to external stimuli to separate the product.

## **Addition/fabrication**

Processes that are used to add/join two materials together, either through temporary or permanent methods.

## **Additives**

Chemicals and compounds that are added to materials to enhance their properties.

## **Aesthetics**

Concerning the physical appearance of a product/object.

## **Anthropometrics**

The taking and use of specific human measurement data within the design of products.

## **Client**

The person/people/audience being designed for and whose needs are being met.

## **Collaborative**

The production of work by more than one person working on the same task.

## **Commercial products**

Products that have been developed and are available for purchase by the general public.

## Critical assessment

The detailed analysis of a product, considering all aspects of the design and manufacture.

## Datum

A specific starting point from which all measurements are taken.

## Die

A specialist machine tool used to form materials through processes such as stamping and pressing. The term is also used to refer to the mould used in die-casting.

## Ergonomics

The study of how humans interact with products and environments.

## Ethical production

Production methods that focus on good health for all involved. This includes the consumer, workers and the environment. For example, they use sustainable materials and ensure the environment, workers and customers are treated fairly.

## Ethics

Moral decisions. In Design and Technology, this would be when designing and manufacturing.

## Extraction

The removal of materials from the environment or existing products for use in future products.

## Fixtures

Used to hold a component during manufacture to ensure accuracy when completing processes such as cutting, drilling and fabrication.

## Former

Used to lay a material on/over during manufacture so that the material will take the shape of the former used.

## Functionality

How well a product carries out its purpose.

## Iterative design

Design methodology based on a cyclical process of analysing, prototyping and testing to refine a product. Each iteration and result starts the process again.

## Jig

Used to hold a component and the tool during a manufacture of a component to ensure accuracy.

## Life cycle assessment

A technique used to assess the environmental impact of a product at all stages of its manufacture, use and disposal.

## Mechanical properties

Properties which refer to how a material responds to an external force.

## Micro electronics

Electronics which uses miniaturised circuits and components.

## Mould

A hollow container which is filled with molten liquid material which takes the form of the mould when left to cool and harden.

## Physical properties

Properties that refer to the actual matter that forms the material (eg insulation, conductivity, fusibility).

## Primary source

Research collected first-hand by a designer to develop a product or idea.

## Primary source (of materials)

Where materials originate (polymers from oil etc) and the raw material that needs to be converted into a workable form.

## Product

Item or artefact developed for an intended audience to solve a problem or meet a need.

## Product miles

An indication of the total distance travelled by a product from initial extraction of raw materials to final use.

## Prototype

An early model or sample of a product used to test a concept.

## Rendering

The production of a realistic full colour representation of a design for review/evaluation.

## Statistical analysis

The interpretation of data to inform design decisions.

## Stock forms

Standard shapes and forms of materials available for purchase.

## Sub-assembly

A collection of parts within a product which are assembled before being added to the final product.

## Surplus

The excess remaining after a process has been completed.

## Tolerance

The minimum and maximum measurements that can be accepted when manufacturing.

## User

The person/people who make use of the product that has been developed by a designer.

## User-centred design

Design development with the user at the centre of the focus. The designer tries to envisage how the product will actually be used, as opposed to focusing on other areas such as cost.

## Virtual modelling

The use of computer-aided design (CAD) software to simulate external forces and processes prior to production of a product.

## Wasting processes

Manufacturing processes that involve the removal of material from an object.

These terms are not in the specification but are useful for students to understand

## Anthropomorphism

The use of human like characteristics within the aesthetics of a design.

## Automation

The use of control systems for operating equipment such as machinery and processes in factories; this reduces human input.

## Calibration

The setting up and adjustment of machinery to ensure accuracy of the parts/products it produces. Effective calibration requires comparison with set values.

## Conceptual stages (of design)

Use of models, sketches and computer aided design (CAD) to show the design of a product as it develops.

## Continuous improvement

The identification of improvements and subsequent evolution of products.

## Co-operative

A group of people united to meet common social, economic or cultural need through a jointly owned business.

## Crowdfunding

Raising money for projects from a large number of individuals often through online platforms.

## Deformation

Manufacturing processes that change the shape of a solid material by applying a force whilst the material is in a plastic state.

## Ecological

The consideration of the environment and the impact that design can have on it.

## Finite

A material or source which will one day run out.

## Fusibility

How well a material is converted by heat into a molten or liquid state dependent on its melting point.

## Lean manufacturing

Reducing and eliminating waste in a manufacturing process.

## Market pull

Products developed to meet the needs of society or a specific section of the market.

## Mechanical device

Mechanism which produces and/or changes movement.

## Nesting

The tessellation of shapes or nets on a material to minimise the amount of waste during manufacture.

## Planned obsolescence

Deliberately designing the lifecycle of a product to be short, forcing the user to update their products quickly.

## Re-distribution

Manufacturing processes which change the 3D form of molten material using dies/moulds.

## Schematic diagram

Graphic symbols or simplistic diagrams used to convey a system (eg an underground map).

## Social footprint

The impact a product or individual has on society.

## Social responsibility

The idea that a designer needs to evaluate the impact their product could have on society and take action to make this better.

## Technology push

Technological discoveries used to drive the development of a product.

## Zoomorphism

The use of animal like characteristics within the aesthetics of a design.