



Knowledge Organiser

Design & Technology

GCSE Design & Technology OCR

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GCSE OCR

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NAME: _____

TUTOR GROUP: _____

1	Chapter 1: Identifying Requirements	Exploring a context	The situation a design solution is intended for.
2		Concept maps	A visual form of chart, table or flowchart to display information.
3		Primary users	The person, group or organisation who will use a product/system.
4		Stakeholders	A person, group or organisation with an interest in a product/system.
5		Human factors	The scientific discipline concerned with the interaction between humans and elements of a product and or system.
6		Social considerations	Such as mobile phones or a musical instrument, but these products can make us more isolated.
7		Cultural considerations	The way people behave and relate to one another.
8		Moral considerations	New products can change the way we work and live. Traditional ways of doing things are sometimes best, but in other situations improved products can build and improve on past designs.
9		Economic considerations	Marking, using and disposing of products will have an impact on the economy and create or affect jobs.
10		Globalisation	Businesses and organisations operating globally and developing international influences.
11		Sustainable economic growth	Development that aims to satisfy the economic needs of humans while sustaining natural resources and the environment for future generations.
12		Product usability	How easy a product is to use; how clear and obvious the functions are.
13		Ergonomics	The study of how we use and interact with a product of system.
14		Inclusive design	Designing for the widest possible audience.
15		Ergonomic considerations	Understanding the interactions between people and the things they do.
16		Anthropometrics	The study of the sizes of the human body.
17		Aesthetic considerations	Factors concerned with the appreciated of beauty – this can include how something looks, sounds, feels, tastes and smells.
18		Colour	It elicits responses by stimulating emotions and can be used to excite and persuade.
19		Proportion and symmetry	Proportion – the relative size and scale of the various elements in a design Symmetry – when elements are arranged in the same way on both sides of an axis or when rotated around a point.
20		Golden ratio	A common mathematical ratio found in nature that can be used to create pleasing, natural-looking compositions in your design work, also known as the Golden Mean, the Golden Section, or by the Greek letter Phi.
21		Fashions and trends	What we think can be aesthetically pleasing can change over time, based on the influence of fashion and trends.

1	Chapter 2: Learning from Existing Products and Criteria Used	Exploring existing products and criteria used	Looking at products that have already been made to gain inspiration for your own designs and to identify problems. You can use the following criteria to help structure your analysis; function, materials and components, construction method, ergonomics and anthropometrics, environmental impact.
2		Materials, components and processes	Analysing these can give you inspiration when designing a product of your own. It also gives a designer an understanding of the physical and working properties of specific materials. You can ask yourself the following questions to help with this; where and how is the product to be used? What are the needs of the primary user and wider stakeholders?
3		Disassembly	Taking apart a product to see how it was made and what materials and components have been used to make it.
4		Design movements and past trends and inspiration	Design movements are distinctive styles that can be linked to a period in time. They are a source of inspiration for designers. Designers look at past trends and design movements to gain inspiration by reflecting on the successes of the past and making them current. Popular design movements include De Stijl, Bauhaus, Art Deco, Minimalist.
5		Marketing and branding	Marketing is the business of promoting and selling a product. This can include advertising, promotion, and market research. Branding can be a name or logo and a popular brand can influence a person to buy a product.
6		Ethical	Correct, good or honourable. Designers should aim for an ethical approach when designing products.
7		Market pull	A product that has been designed with specific needs and wants of the consumer in mind. Information will be gained from market research and will be popular products due to there being a clear need and want for them.
8		Technology push	When the development of new technologies drives the development of a new product e.g. touchscreen and fingerprint technology in smartphones.
9		Twenty-first century design	Reflecting on the successes of the past, whilst considering new technologies to create new and innovative products.
10		Impact on society	The effect a product has on people. These can be both negative and positive. When considering this you need to think about different cultures and different types of people in society.
11		Impact on usability	When analysing products, you need to consider how easy they are for a person to use. Ergonomics, anthropometrics, and aesthetics can all be considered.
12		Lifecycle assessment	A tool for systematically evaluating the environmental aspects of a product or system.
13		Throwaway society	A society influenced by consumerism and excessive consumption of products.
14		Circular economy	Where all waste can be put back into the system and reused or recycled.
15		How emerging technologies influence and inform design decisions	New technologies are technologies that are currently being developed or will be developed in the next 5-10 years. When analysing products, you need to consider the positives and negatives of using new technologies within the design of a new product.
16		Ethics	Design decisions that are correct, fitting, good or honourable.
17		Product enhancement	A change or upgrade that increases a product's capabilities.

1	Chapter 3: Implications of wider issues	Impacts of new and emerging technologies	All new and emerging technologies have an impact on our lives which can be both positive and negative.
2		Artificial intelligence	Computer systems that are able to perform tasks that normally require human intelligence, such as visual perception, speech recognition and decision making.
3		Biometrics	The recognition of individuals by means of unique physical properties, such as fingerprints and retinas. Typically used for security.
4		Virtual reality	A computer-generated simulation of a 3D image or environment that can be interacted with in a seemingly real or physical way using special electronic equipment, such as a helmet with screens inside or gloves fitted with sensors.
5		Drones	A remote-controlled pilotless aircraft or small flying device that is used in various industries from retail to manufacturing.
6		Impact on environment	The effect the manufacturing and use of a product has on the environment.
7		Planned obsolescence	When a product is designed to break after a set period of time.
8		Sustainability	Something that can continue to be used and won't run out. Wood is a sustainable material as trees can be regrown.
9		6Rs	Rethink, Reuse, Recycle, Repair, Reduce, Refuse. Designers use them to ensure they are designing sustainably.
10		Circular economy	Make, use, recycle.
11		Linear economy	Make, use, dispose.
12		Cradle to cradle	A production method in which all materials can be recycled, reused or composted.
13		Fossils fuels	Oil, natural gas and coal. These are all finite resources and will run out.
14		Finite resource	A resource that cannot be replenished when it has been used up.
15		Kinetic energy	The energy in a moving object.
16		Thermal energy	Energy that comes from heat.
17		Chemical energy	Energy that is stored in fuels and burnt to release thermal energy.
18		Non-renewable energy	Sources come out of the ground as liquids, gases and solids and cannot be quickly replenished.
19		Renewable energy	Sources such as solar and wind that can be replenished naturally in a short period of time.
20		Environmental initiatives	Initiatives that limit the impact that the design and making process has on the environment.
21		Fairtrade	Establishing better prices, working conditions and terms of trade for farmers and workers.
22		Social and ethical awareness	Designers considering the working conditions of those involved in designing and making the products we buy. Designers also need to consider the social and ethical issues associated with their designs and the impact this will have.
23		Global sustainable development	The collective action of governments, globally, to minimise the negative impact manufacturing has on the planet.

1	Chapter 4: Design Thinking and Communication	2D sketching	Flat drawings that only show only two dimensions.
2		3D sketching	Drawings in three dimensions that show depth.
3		Perspective drawing	A 3D sketching technique that shows objects in proportion.
4		Isometric drawing	A 3D technique in which parallel lines at 30-degree angles are applied to the drawn object.
5		Oblique drawing	A 3D sketching technique that shows one face of the item square on and using real proportions, with other angled lines to give depth.
6		Iterative design	Design, prototype, evaluate. This is a circular process that continues until the design fully meets the needs of the user.
7		Working drawings	Drawings that contain all the information needed to make a design, including dimensions, components, materials, assembly instructions.
8		Orthographic projections	2D sketches that show different views e.g. plan, front, side and sectional views.
9		Sketch models	Quick models, often of just parts of a design, made from easy to work with, low-cost materials.
10		Exploded drawings	A 3D drawing that helps show the layout of parts and components in relation to each other. They help designers visualise how the parts fit together and identify problems.
11		Mathematical modelling	The representation of real situation, using mathematical concepts, rather than a physical model. This can be built into computer software and test things like circuits, without having to actually build them.
12		Flow charts	Document and help with the understanding of simple processes.
13		Schematic diagrams	Used to show the arrangement of components in electrical and mechanical systems.
14		Focus groups	A group of people gathered together to ask about their views and experiences of a particular product, brand, service, idea, advert or packaging.
15		User-centred design (UCD)	Design approach with the aim of making products and systems usable. Focuses on the user interface and how a user relates to, and interacts with, a product.
16		Design fixation	Focusing on designs that already exist. This leads to products not being innovative and not solving identified problems.
17		Biomimicry	Gaining inspiration from nature when solving design problems.
18		Systems thinking	The understanding of a product or component as part of a larger system of other products and systems.
19		Collaboration	Working with others for mutual benefit. Effective collaboration between designers, developers, users and other stakeholders can be the difference between success and failure.

1	Paper	Widely used by designers for a range of purposes from the sketching, drawing and planning of ideas through to the modelling and prototyping of design solutions.
2	Card and cardboard	Thicker than paper and widely used to make a range of common products.
3	Corrugated cardboard	Strong but lightweight card, made from two layers of card with another, fluted sheet in between.
4	Board sheets	Used for picture framing mounts and architectural modelling and is a rigid card with a smooth surface.
5	Laminated layers	Include various other materials that come in sheet form, like paper and cardboard, and can be used in similar ways.
6	Foam board	Lightweight board made up of polystyrene foam sandwiched between two pieces of thin card or paper.
7	Styrofoam	Trade name for expanded polystyrene foam. Comes in a wide range of sizes and thicknesses and can easily be cut and shaped.
8	Corriflute	An extruded corrugated plastic sheet, similar in structure and thickness to corrugated card.
9	Natural timber	Natural wood is wood which was produced naturally (ie. grown as a tree), and which has not been chemically treated. This can include chemical drying, painting, pressure treating, or any other form of artificial modification to the wood beyond simply drying and cutting it.
10	Manufactured timber	Manufactured boards such as medium-density fibreboard (MDF) are man-made from recycled material and other boards such as plywood are man-made from layers of wood.
11	Softwoods	The wood from a conifer (such as pine, fir, or spruce) as distinguished from that of broadleaved trees.
12	Hardwoods	The wood from a broadleaved tree (such as oak, ash, or beech) as distinguished from that of conifers.
13	Ferrous metal	(chiefly of metals) containing or consisting of iron.
14	Non-ferrous metal	Relating to or denoting a metal other than iron or steel.
15	Alloy	A metal made by combining two or more metallic elements, especially to give greater strength or resistance to corrosion.
16	Thermopolymer	PET, HDPE, PVC, PS, PP, ABS are all examples of thermo polymers they soften when they are heated and can be moulded into shape.
17	Thermosetting polymer	Silicone, polyester resin and epoxy resin are types of thermosetting polymer.
18	Natural fibres	Natural fibre, any hairlike raw material directly obtainable from an animal, vegetable, or mineral source and convertible into nonwoven fabrics such as felt or paper or, after spinning into yarns, into woven cloth.
19	Synthetic fibres	Many synthetic fabrics have attractive appearances and mimic natural substances like silk. Synthetics are often smooth, lightweight and wrinkle-resistant.
20	Blended fibres	Blended fibres are made by combining various fibres to enhance the property of the product. For eg: spandex and cotton is a natural mix for sports clothing and undergarments to improve stretching properties and prevent odour.
21	Woven fabric	Woven fabric is any textile formed by weaving. Woven fabrics are often created on a loom and made of many threads woven on a warp and a weft.
22	Non-woven fabric	Nonwovens are flexible, porous, products consisting of one or more fibre layers. The separate fibres may either be preferentially oriented in one direction or may be deposited in a random manner.

Chapter 5: Material Considerations

23	Chapter 5: Material Considerations	Modern materials	A modern material is a material that has been engineered to have improved properties. Concrete, aluminium and steel are all commonly used modern materials.
24		Polymorph	An organism or inorganic object or material which takes various forms.
25		Teflon	A tough synthetic resin made by polymerizing tetrafluoroethylene, chiefly used to coat non-stick cooking utensils and to make seals and bearings.
26		Smart materials	Smart materials, also called intelligent or responsive materials, are designed materials that have one or more properties that can be significantly changed in a controlled fashion by external stimuli, such as stress, moisture, electric or magnetic fields, light, temperature, pH, or chemical compounds.
27		Shape memory alloy	A shape-memory alloy is an alloy that can be deformed when cold but returns to its pre-deformed ('remembered') shape when heated. It may also be called memory metal, memory alloy, smart metal, smart alloy, or muscle wire.
28		Shape memory polymer	Are polymeric smart materials that have the ability to return from a deformed state to their original shape induced by an external stimulus, such as temperature change.
29		Thermochromic pigments	Thermochromic pigments change colour when their temperature changes. The term 'thermo' relates to heat, and chroma means colour - so thermochromic pigments change colour when they are heated up. These pigments can be mixed with paint or polymers to give the materials the same colour-changing properties as the pigment.
30		Carbon fibre	A material consisting of thin, strong crystalline filaments of carbon, used as a strengthening material, especially in resins and ceramics.
31		Kevlar	A synthetic fibre of high tensile strength used especially as a reinforcing agent in the manufacture of tires and other rubber products and protective gear such as helmets and vests.
32		Density	Is the mass of a material - its weight divided by its volume.
33		Strength	The capacity of an object or substance to withstand great force or pressure.
34		Hardness	Hardness of materials is defined as the ability of a material to resist plastic deformation, usually by indentation.
35		Durability	The ability to withstand wear, pressure, or damage.
36		Strength to weight ratio	The ratio of the strength (usually the tensile or compressive strength) of an object to its weight, or that of a substance to its density.
37		Elasticity	The ability of an object or material to resume its normal shape after being stretched or compressed; stretchiness.
38		Impact resistance	Impact resistance is a material's ability to withstand intense force or shock applied to it over a short period of time. Impact resistance is an important consideration for fall protection equipment.
39		Plasticity	The ability of a material to permanently change in shape when force is applied to it.
40		Ductility and malleability	Ductility and malleability are properties related to deformation of metals. Ductility is the ability of a metal to undergo tensile stress. Malleability denotes the ability to undergo compressive stress.
41		Brittleness	Hard but liable to break or shatter easily, break when bent or impacted.
42		Corrosive resistance	The definition of corrosion resistance refers to how well a substance (especially a metal) can withstand damage caused by oxidization or other chemical reactions. An example of corrosion resistance is when a boat is treated to prevent rust and is thus able to withstand damage.
43		Water resistance	Able to resist the penetration of water to some degree but not entirely.

44	Absorbency	Absorbency is the ability of the fabric to absorb and retain the moisture within its structure.
45	Flammability	Flammability is the capability of a material or substance to burn, ignite, combust or catch fire.
46	Electrical conductivity	Electrical Conductivity. Definition - What does Electrical Conductivity mean? Electrical conductivity is the reciprocal process of electrical resistivity. It measures the ability of a certain material to conduct electrical currents.
47	Thermal conductivity	Thermal conductivity (sometimes referred to as k-value or lambda value (λ)) is a measure of the rate at which temperature differences transmit through a material. The lower the thermal conductivity of a material, the slower the rate at which temperature differences transmit through it, and so the more effective it is as an insulator.
48	Magnetic properties	Magnetic property refers to the response of a material to an applied magnetic field. The macroscopic magnetic properties of a material are a consequence of interactions between an external magnetic field and the magnetic dipole moments of the constituent atoms.

1	Chapter 6: Mechanical Devices and Electronic Systems	Rotary motion	When it spins on its axis in a circular motion.
2		Linear motion	Linear motion (also called rectilinear motion) is a one-dimensional motion along a straight line and can therefore be described mathematically using only one spatial dimension.
3		Oscillating motion	Oscillatory motion is defined as the to and fro motion of an object from its mean position. The ideal condition is that the object can be in oscillatory motion forever in the absence of friction but in the real world, this is not possible and the object has to settle into equilibrium.
4		Reciprocating motion	Reciprocating motion, also called reciprocation, is a repetitive up-and-down or back-and-forth linear motion. It is found in a wide range of mechanisms, including reciprocating engines and pumps.
5		The effect of forces on ease of movement	Forces and their effects are all around us. They keep us firmly rooted to the ground, they make us move and they stop us slipping and sliding. Forces are vital to life and the universe. However, forces only do three very simple things. They change: If you crumple up a piece of paper, you have changed its shape.
6		Mechanism	A system of parts working together in a machine; a piece of machinery.
7		Force	Strength or energy as an attribute of physical action or movement.
8		Input	The type of motion or force put into a mechanism.
9		Output	The type of motion or force a mechanism produces.
10		Lever	A bar that turns around a fulcrum.
11		Arm length	The distance between the force being exerted and the fulcrum.
12		Effort	The input force.
13		Fulcrum	The pivot around which a lever turns.
14		Load	The output force.
15		Cams	A mechanism to convert rotary motion into reciprocating motion.
16		Gears	A wheel with teeth around it.
17		Pulleys and belts	A transfer of rotary motion between 2 shafts.
18		Lever and linkages	A component used to direct forces and movement to where they are needed.
19		A generic electronic system	A flow from input-process-output.
20		Subsystem	A section with a specific role within a system.
21		System diagram	A diagram of the interconnections and flow of signals in an electronic system.
22		Microcontroller	A programmable electronic component that adds functionality to a product.
23		Embedding	Customising a microcontroller to be permanently placed within a product.
24		Physical quantity	Something that can be measured eg light, temperature, speed.
25		Program	A set of instructions to tell a microcontroller how to carry out a task.
26		Sensor	A component that produces a signal in response to a specific physical quantity.

27		Signal	Light dependant resistor.
28		Light sensor	Light dependant resistor.
29		Infrared sensor	An invisible radiant energy given off by warm objects.
30		Switch sensor	A simple electronic component that can be either off or on.
31		Speakers and buzzers	Can be programmed to produce musical notes and they can play tunes.
32		LED	(Light Emitting Diodes) has progressed enormous rate and a very wide range of LEDs are now available which includes colour, size, shape, brightness, normal or flashing).
33		Motors	An electric motor is a component that produces rotary motion when it receives power.

1	Chapter 7: New and Emerging Technologies	Nanotechnology	Technology on a microscopic scale.
2		Cloud computing	A network of online servers that store and manage data.
3		Internet of things	Where electronic devices connect within the existing internet infrastructure, to send and receive data without human intervention.
4		Economies of sale	The cost advantages that manufacturers obtain due to the size, output or scale of their production.
5		Disruptive technologies	Can allow smaller companies to take on large companies and create products that change the way we work and live, they often create new market demand and thinking.
6		Additive manufacturing	The term used to describe technologies that transfer 3D designs into solid, physical forms.
7		3D Printing	Prints thermoplastic material layer by layer to build up a 3D shape.
8		Advanced robotics	Used extensively in automotive manufacturing, welding, material handling and painting.
9		Virtual reality	VR is used to test new concepts.
10		Maker movement	3D printers, scanners, CAD software have made it possible for people to design and make high tech products at home, enabling a maker movement.

1	Chapter 9: Timbers	Renewable	A natural resource that is not depleted by use.
2		Climate change	A change in global climate apparent from the mid to late twentieth century onwards.
3		Organic	Derived from living matter.
4		Softwood	From coniferous trees.
5		Pine	Hard, straight grain, usually knot free, used for internal building work such as staircases.
6		Cedar	Used for outside joiner, resists insect attack.
7		Hardwood	From deciduous trees.
8		Oak	Heavy, hard tough wood good for garden furniture.
9		Beech	Tough, hard wood used for toys, tools, good for steam bending.
10		Coniferous	Wood from conifer trees, evergreen, keep their needles.
11		Deciduous	Wood from oak trees, loses their leaves over winter.
12		Manufactured boards	Manufactured sheets of timber using both soft and hard woods.
13		MDF	Medium density fibreboards.
14		Plywood	Layers of veneer glued at 90 degrees to each other.
15		Conversion	When a tree has been cut down, its branches are trimmed off and its bark is removed before it is cut roughly into boards, planks or veneer.
16		Warp	Becomes twisted or out of shape.
17		Seasoning	Adjusting the moisture content of timber to make it more suitable for use.
18		Plain sawn	The cheapest method but the outer planks tend to warp.
19		Quarter sawn	More expensive, more time and labour, produces more waste.
20		Deforestation	Shrinking forest.
21		Ecological impact of using timber	An environmentally friendly material.
22		Veneers	A thin shaving of wood that is either cut from a log by rotary peeling or thinly sliced from a long block.
23		Recycling timber	Reclaimed, up-cycled, down-cycled, biomass.
24		Bamboo (eco-material)	A grass that grows quickly.
25		Stock forms of timber	Planks, boards, strips, squares, dowelling, timber moulding.
26		Standard components	Countersink head, round head, raised head, twinfast, coach, round wire nails, oval wire nails, panel pins, masonry nails, clout nails, staples, cut tacks, hardboard pins, corrugated fasteners, butt hinges, piano hinges, butterfly hinges, flush hinge, barrel hinge.
27		Wastage	Cutting material to the shape required and removing any excess material.
28		Marking out	Before you cut you must mark out your design.
29		Engineers square	To mark a 90 degree to the edge.
30		Marking gauge	Used on timber to draw a line along the grain.
31		Tenon saw	General purpose saw that is very good at marking straight cuts in timber.
32		Coping saw	Used for cutting shapes and curves in wood and plastic.

33	Chapter 9: Timbers	Hand saw	To cut large pieces of timber by hand.
34		Jigsaw	Electric saw for cutting shapes.
35		Band saw	Electric heavy duty saw.
36		Circular saw	Heavy duty saw with a circular blade, cuts timber and MDF.
37		Twist bit	A common drill bit for drilling holes in timber, plastic, and metal.
38		Countersink bit	Provides the countersunk shape for screws so they do not protrude from the surface.
39		Forstner bit	Provides a smooth sided, flat-bottomed hole.
40		Flat bit	Fast and accurate drilling in solid pieces of timber.
41		Hole saw	Interchangeable cutting blades that enable you to drill holes of 20-75mm diameter.
42		Pillar drill	Electric drill to be used on wood, plastic and metal for drilling holes.
43		Electric hand saw	Electrical hand saw.
44		Files	To shape and remove waste from timber, metal and plastic.
45		Surform	Similar to a cheese grater and can remove wood very quickly.
46		Chisel	Removes small amounts of wood.
47		Plane	Removes excess wood to produce a smooth surface.
48		Planer thicknesser	Large electric planes fixed to the floor used to plane wood to a specific thickness.
49		Belt sander	A motor that drives 2 drums that turn a continuous band of abrasive paper.
50		Band facer	For sanding wood, it has a long belt which spins round.
51		Sandpaper (low to high grit)	Abrasive paper to be used on timber, fine (120-229), medium (60-100), coarse (40-50) and extra coarse.
52		Wood lathe	A machine that rotates a piece of timber and special tools are used to cut into the wood as it turns.
53		Router	A versatile tool that is used for cutting grooves into timber.
54		Butt joint	Two pieces of timber are joined by placing their ends together.
55		Dowel joint	Holes are drilled in the joint surface of two pieces of timber, short dowels are then inserted with glue until dry.
56		Finger joint	Two pieces of timber interlock at 90-degree angle when glued.
57		Mitre joint	Two pieces joined at a 45-degree angle.
58		Cross halving joint	Joint is made in the middle of the timber to allow internal parts of the frame to cross each other inside the frame.
59		Steam bending	Softening the fibres of wood with steam to allow to bend.
60		Kerfing	Making saw cuts so that wood can bend.
61		Laminating	Building up a shape in thin layers.
62		Triangulation	The use of triangle shapes to give stability to structure.
63		Knock down fittings	Two block fitting, rigid joint, connector bolt, cross dowels, cam locks, bench top joiners, table plate.
64		Varnish	Available in oil, water, and solvent based, clear or transparent.
65		Oil	Improves appearance of wood.
66		Wood stain	Improves colour of wood and helps show up grain.
67		Paint	Comes in enamel, spray and acrylic to colour wood.

68	CAD	Computer aided design.
69	CAM	Computer aided manufacture
70	CNC machines (router, lathe, drill)	Computer controlled cutting machine for cutting hard materials.
71	Scales of production	The number of products being produced in one go.
72	Mass production	Producing very high large numbers of an item or product.
73	Batch production	Making a set number of identical products.
74	One-off / bespoke production	Making only one or a small number of products.
75	Jigs	An acrylic template used to mark out your shape.

1	Key Terms	Stakeholder	In the business world, a stakeholder is a person or group who has invested in a company or enterprise, such as the owner or shareholder (they hold a 'stake' in the business). Other stakeholders include those who have an interest in or are affected by the business in some way, such as the people who work there, the customers, or the local community. Further stakeholders have influence in how the business operates, these include government (policies, laws, regulations) and local authorities.
2		Primary users	The main user of a product.
3		Iterative design	The design process that is cyclical and reflective, repeating over and over to improve and refine design solutions (design iterations) to best meet the needs of users and stakeholders. The key aspects of the process are explore, create, evaluate .
4		Context	A setting, location, environment, or situation. A context needs to be fully explored before designing to ensure you fully understand it. Problems can then be identified and designs created to solve them.
5		Primary research	Research carried out by you. This could be in the form of an interview/questionnaire, taking photos/videos of a context.
6		Secondary research	Research carried out by someone else. This could be taken from the internet, books, magazines etc.
7		Sustainable	Resources that can be naturally replenished within a short amount of time. E.g. softwood is a sustainable resource because it is a natural material that grows quickly.
8		Circular economy	Manufacture, use, recycle. Resources are re-used and recycled with minimal wastage.
9		Collaboration	Working with others towards a shared goal. Collaborating is encouraged within the world of design and will help improve NEA work.
10		Commercial viability	How feasible it is for a prototype to be manufactured and sold. In your NEA the commercial viability of your final prototype needs to be considered, thinking about market demand and existing competition.
11		Critique	Identification of the best choices when creating a design/prototype. It takes into account the best materials to use, size, weight, features etc.
12		Design optimisation	Identification of the best choices when creating a design/prototype. It takes into account the best materials to use, size, weight, features etc.
13		Ecological and social footprint	Ecological footprint = the measure of the impact of a person or community on the environment, on nature and natural resources. Social footprint = the impact a person or community has on other people.
14		Fixation	Fixation is a mental state where a designer can become completely focused on one idea or concept and be 'blind' to alternatives. This hinders creative and innovative thinking, blocking progression through the process of design development. You will be expected to use appropriate design strategies and approaches in their iterative designing to avoid fixation.
15		Marketability	Understanding the market for a product, those who will potentially buy the product; and understanding users and stakeholders and their requirements, is essential if the product is to be marketable.

16	Key Terms	Planned obsolescence	Planned obsolescence, is where a company decides to manufacture consumer products in a way that they become obsolete within a known time period. The aim is usually to ensure sales of their next new product, a continuing market, thus keeping the company in business.
17		Real-time evidence	For your NEA the requirement is for you to provide real-time evidence means recording activity, events or processes immediately (at the same time) as they happen. Strong evidence (e.g. video, photograph or authentic document) is needed to demonstrate that the activity, event, or process actually happened as stated or claimed.
18		Reflect	Firstly, 'to think deeply about', 'to contemplate', to 'identify successes and failures', 'strengths and weaknesses'. Then secondly reflect means 'to take into account', 'to follow' or 'to mirror'. So where you see 'reflect' it means to look back closely and incorporate what needs to be brought forward. Reflecting within the design process will help you to identify what to do next.
19		Sketch modelling	Quick models, often of just parts of a design, made from easy-to-work and low cost materials such as cardboard or foam.
20		Specifications	Listing requirements or specific details at any point of the process to give focus, structure and direction to the next steps. Supported by real knowledge and understanding. Requirements that may be considered are: user or stakeholder requirements - compiled following discussions/investigations with users and stakeholders and technical requirements such as; materials, function, performance.
21		Systems thinking	The understanding of a product or component as part of a larger system of other products and systems.
22		Tolerances	The tolerance states the acceptable variation in size for each component and would normally be indicated in specifications. Tolerances may also refer to other characteristics such as weight, capacity, quantity, or hardness.
23		User-centred design	Making products and systems usable. It focuses on how the user interacts with and relates to the product; creating products with a good consideration of usability.
24		Usability	'Is the product user-friendly?' How easy the product is to use, how clear and obvious are the functions?



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