## **GCSE Design Technology Personalised Learning Checklist**

## Name:

what I need to do it.

R

Exam Board	Board AQA			My target grade is		
				Group		
My current Grade	e is:	Autumn:		Spring:	Summer:	
G I am confide	ent about th	nis topic and I know	w wha	at I need to do.		

I am not too sure about this topic. I may need to check with my teacher and spend more time working on this

I am not confident I could answer a question on this topic. I need to check with my teacher and ensure I have

Topic/Unit Focus		1			2		Revision		on
METALS		Α	G	R	Α	G	R	Α	G
Ferrous metals properties (iron, stainless steel, carbon steel)									
Non Ferrous metals properties (Aluminium, copper, tin, zinc)									
Alloy metals properties (Brass, stainless steel,pewter, copper)									
Stock forms									
Environmental impact (Sourcing and manufacture)									
Joining methods (brazing, welding, Soldering, pop rivet)									
Surface treatments and processes									
life cycle (extraction, processing, manufacture, use, disposal)									
workshop tools, equipment and casting									
PAPER AND BOARDS	R	Α	G	R	Α	G	R	Α	G
Papers properties (Grid,isometric, tracing, cartridge,bleedproof)									
Card properties ( Corrugated, foil lined, solid white, duplex)									
Sizes and weights (A6-A1, GSM)									
Sustainability and environmental impact									
Life cycle (source, manufacture, use and disposal)									
Joining methods and tools and equipment									
Surface finishes and printing methods									
NATURAL AND MANUFACTURED TIMBERS	R	Α	G	R	Α	G	R	Α	G
Hardwoods properties (Ash, Oak, Beech, Balsa, Mahogany)									
Softwoods properties (Pine, Spruce, Larch)									
Manufactured Boards properties (MDF, Plywood, Chipboard)									
Stock forms									
Environmental impact, cultural and sustainability considerations									
Joining methods (Joints, knock down fittings, Glues and screws)									
Workshop tools and machinery for cutting, joining and shaping									
Surface treatments (veneer, varnishes, oils, paints)									
Life cycle (Source, processing, use and disposal)									
TEXTILES	R	Α	G	R	Α	G	R	Α	G
Natural fibres properties (cotton, Wool, Silk)									
Synthetic fibres (Polyester, Lycra, Nylon)									
Joining methods and tools (type of stitches)									
environmental, cultural and social issues									

Topic/Unit Focus		1			2			Revision			
POLYMERS	R	Α	G	R	Α	G	R	Α	G		
Thermoforming plastics (acrylic, HDPE, PVC etc)											
Thermosetting plastics (Epoxy resin, Urea-formaldehyde etc)											
Bio plastics (corn starch)											
Stock forms											
Environmental impact, cultural and sustainability considerations											
Joining methods											
Workshop tools and machinery for cutting, joining and shaping											
Usage											
INVESTIGATION INTO WORK OF OTHERS	R	Α	G	R	Α	G	R	Α	G		
DYSON and ALESSI											
Phillippe Stark, David Adjaye, Marc Breuer											
UNDERSTANDING DESIGN STRATEGIES	R	Α	G	R	Α	G	R	Α	G		
Collaboration											
User centred design											
Iterative design											
Design fixation											
Systems approach design											
MATERIAL PROPERTIES	R	Α	G	R	Α	G	R	Α	G		
Absorbency (resistance to moisture)											
Density											
Electrical and Thermal conductivity											
Strength, Hardness, Toughness											
Malleability											
Ductility and elasticity											
FORCES AND STRESSES	R	Α	G	R	Α	G	R	Α	G		
Tension, Compression, Bending, Torsion, Shear											
Enhancing materials to resist forces and improve functionality											
MECHANICAL DEVICES	R	Α	G	R	Α	G	R	Α	G		
Levers (first order, second order and third order levers) + uses											
Linkages (bell cranks, push/pull) +uses											
Rotary systems (CAMS, pulleys and belts, Gear trains) +uses											
Types of movement (Linear, Rotary, reciprocating, oscillating)											
SYSTEMS (ELECTRONIC and MECHANICAL)	R	Α	G	R	Α	G	R	Α	G		
Identify electronic components and symbols and their functions											
Input components (Types of sensors and switches)											
Processes (microcontrollers, timers)											
Output components (Buzzers, speakers, lamps)											
The role of programmable components											
Drawing circuit boards. Flow charts,											
Tools and equipment, processes in manufacturing circuit boards											
COMMERCIAL PROCESSES	R	Α	G	R	Α	G	R	Α	G		
Metals (milling casting)											
Polymers (Injection Moulding and extrusion)	1										
Timbers (Routing and turning)											
Paper and boards (Offset lithography, die cutting)	1										
	1	ı	1	1	ı	1					

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Revision

**Topic/Unit Focus** 

ECOLOGICAL AND SOCIAL FOOTPRINT	R	Α	G	R	Α	G	R	Α	G
Deforestation, Mining, drilling, farming (society impact)									
Life cycle analysis of product or material (Carbon footprint)									
Apply the 6Rs (Reduce, reuse, refuse, repair, recycle, rethink)									
Evaluate the impact on others (pollution, habitat, conditions)									
Environmental impact, cultural and sustainability considerations									
Material selection (Finite, non finite and disposal of waste)									
IMPACT OF NEW AND EMERGING TECHNOLOGIES	R	Α	G	R	Α	G	R	A	G
Industry (Automation and robotics impact on workforce, company) Innovation business (crowd funding, fair trade, co-operatives, Virtual marketing and retail)									
Market pull and market push									
Changes in trends (respecting faiths and beliefs)									
Computer aided design (CAD) impact on industry, role									
Computer aided manufacture (CAM) impact on industry future role									
Just in Time (JIT) manufacture, ordering									
Lean manufacturing									
ENERGY GENERATION AND STORAGE	R	Α	G	R	Α	G	R	Α	G
How is energy made from Fossil fuels (for and against arguments)									
What are fossil fuels (coal, Gas, Oil, impact and future concerns)									
How is Nuclear power generated (for and against arguments)									
Renewable Energy (wind, solar, tidal, biomass, hydro-electric)									
How is renewable energy generated (for and against arguments)									
Energy storage (Alkaline, rechargeable batteries)									
SMART AND MODERN MATERIALS	R	Α	G	R	Α	G	R	Α	G
Definition of Modern materials									
Definition of Smart materials									
Named modern materials and their properties and uses									
Named Smart materials and their properties and uses									1
Composite materials									$\vdash$

Therapy (Interventions)	
Additional Support / Guidance	

Investigating primary + secondary data to identify user needs	R	Α	G	R	Α	G	R	Α	G
Market research (existing product analysis, market trends									
interviews, questionnaires, client meeting, location visit									
Writing a design brief and manufacturing specification									
Investigate environmental, social and economic challenges									
COMMUNICATION OF DESIGN IDEAS	R	Α	G	R	Α	G	R	Α	
Freehand sketching, isometric images, perspective drawings									
annotating explaining development of ideas									
orthographic drawings or exploded diagrams (construction detail)									
responding and adapting to client feedback									
Computer based modelling									
3D modelling of final design (foam, card)									
Material investigation, selection and experimentation									
PROTOTYPE DEVELOPMENT	R	Α	G	R	Α	G	R	Α	
Create detailed manufacturing flow chart, production plan									
Selection and use of tools and machinery in workshop									
EVALUATION AGAINST SPECIFICATION		Α	G	R	Α	G	R	Α	
Evaluation of outcome against brief and specifications									
Evaluation and feedback against clients requirements									