



Scheme of Work

SUBJECT: **Design & Technology**

YEAR - 8

	Topic – Garden Tool	Topic – Chocolate Mould	Topic – Dream House
Key concepts	Workshop safety – hot working. Properties of steel, forming, joining, finishing. Ergonomics.	Polymers, origins of plastics, uses of polymers, recycling, disposal, forming of thermo-forming plastics.	Functions of housing, society expectations, costs, design for purpose. Model making.
Themes	Design for purpose, analysis of situation, applying practical skills to problem solving.	Industrial processes, production types (one-off, batch, mass), packaging.	Tiny-house design, conceptual use of space, multifunctional furniture, CAD, presentation using formal drawing techniques.
Challenge	Design – write detailed, user focused specifications, explore complex designs. Make – Use processes to combine materials and forms to create complex and highly effective outcomes.	Presenting complex ideas using appropriate methods. Designs are complex and involve multi-layered mould features. Making is independent and accurate, combining available materials.	Use formal drawing techniques from scratch to develop concept ideas – independently. Measure accurately to create floor plan using scale. Create a 3D model – extension task.
Support	Design – complete provided drawings rather than working from scratch. Make – Use all processes but create simple, functional outcome.	Ideas presented based on templates provided. Designs utilise basic principles/shapes. Making is supported by staff or peers and lacks complexity.	Rely on simple techniques to present concepts. Squared paper used to layout floor plan. 3D drawing templates supplied.
Literacy focus	Keywords associated with metal & metal working processes.	Keywords associated with polymers and industrial processes.	Annotation of presentation. Verbal presentation of ideas using appropriate language.
Numeracy focus	Measuring, temperatures, proportions.	n/a	Consideration of housing costs and implications against average earnings. Scale drawings/plans.

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Cross-curricular links	Historic links to discovery and application of various metals.	Science links – polymers (thermoforming and thermosetting)	
SMSC & MBV	Benefits of gardens – mental health/local growing of food. Food miles concept. Ergonomics – designing for human interaction.	Understanding manufacture in the food industry – implications. Origins of oil-derived plastics and implications for disposal/recycling and pollution issues.	Consideration of ‘housing for all’ and ‘tiny house’ movement.
ASSESSMENTS	Design work, production plan, practical outcome.	Presentation drawings, flow-chart planning, accuracy of practical work.	Accuracy of presentation drawing for concept, detail level in floor-plan and appropriacy of dimensions. Model making is assessed.
Out of school learning	IST – Metals as materials, history, uses, application.		



NB: Module is split into the following:

- **Theory** – These sessions are linked to the theme/project and skills/knowledge feeds into the project. However, these may be 'stand-alone' lessons with immediate outcomes, feedback and progression.
- **Portfolio** – These sessions are focused on design, development and activities specifically feeding into the practical element of the module.
- **Practical** – These sessions provide pupils with workshop time to build, construct and finish the product(s) they have designed during portfolio lessons.

Sessions are colour coded in the SOW to indicate category.

It is important to note that the sequence of these lessons is highly dependent on the 'pattern' of time allocated in the timetable (e.g. double sessions would be mostly used for practical while end-of-day shorter sessions preclude practical work and would be used to focus on theory or portfolio work).

Other factors such as interruptions to the normal timetable or pressure of completing practical work with a less practically able group mean the sequence in which sessions are delivered may alter. Indicative time is suggested for each activity and may be split over more than one week.

Sequence of activities would ideally be as follows – subject to pace of group, prior knowledge and other external factors. (Assuming 5 weeks X 5 lessons.)

Module 1



Module 2





Lesson	Key concepts	Learning outcomes	Differentiation	Resource
Portfolio 1 (2 sess)	<p>Intro to project and analysis - TOOLS</p> <ul style="list-style-type: none"> Pupils begin by considering the situation, what tools do, are used for or their functions. Jobs in the garden are considered as well as potential users of products. Drawing skills workshop focuses on sketching and presentation skills necessary for this project. 	<ul style="list-style-type: none"> <u>The Big Picture - 1</u> <ul style="list-style-type: none"> <u>TO</u>: Design & make a small, hand tool for use in the garden. <u>Learning Objective</u> <ul style="list-style-type: none"> <u>WE ARE</u>: Analysing the situation so we can begin to design. <u>Success Criteria</u> <ul style="list-style-type: none"> Good – List several tasks in the garden and people who use tools. Better – Categorise garden tasks & users of garden tools. Best – Create sub-categories of garden tasks & give reasons why groups of users may need changes made to tool design to suit them. <u>The Big Picture Picture - 2</u> <ul style="list-style-type: none"> <u>TO</u>: Design & make a small, hand tool for use in the garden. <u>Learning Objective</u> <ul style="list-style-type: none"> <u>WE ARE</u>: Investigating garden tools - drawing. <u>Success Criteria</u> 	<p>Support: Keywords provided for support with analysis.</p> <p>Partially drawn layouts support with drawing skills workshop.</p> <p>Challenge: In-depth analysis including reasons why a particular group of users might require a specific feature of design.</p> <p>Drawing skills are applied independently and include formal drawing methods.</p>	<p>Tools Equipment Stationery Books Support worksheets.</p>



		<ul style="list-style-type: none"> – Good – Draw 3D views of simple tools. – Better – Draw 3D views of tools using graphical conventions. – Best – Illustrate different handle types. 		
<p>Portfolio 2 (2 sess)</p>	<p>Conceptual Design</p> <ul style="list-style-type: none"> • Using drawing skills to present ideas which solve problems or ‘add value’ to existing products. <p>Example case study – Dyson. Doesn’t really solve ‘new’ problems but adds value or improves upon existing products.</p>	<ul style="list-style-type: none"> • <u>The Big Picture</u> <ul style="list-style-type: none"> – <u>TO</u>: Design & make a small, hand tool for use in the garden. • <u>Learning Objective</u> <ul style="list-style-type: none"> – <u>WE ARE</u>: Designing our own tool. • <u>Success Criteria</u> <ul style="list-style-type: none"> – Good – Use notes & drawings to communicate several ideas using drawing conventions (line rule / rendering). – Better – Show an understanding of how materials and components can be joined / assembled. • Best – Annotate design ideas showing how they suit the purpose and user. 	<p>Support: Tutor support to conceptualise and present a range of ideas.</p> <p>Challenge: Fully annotated design ideas showing level of understanding of user and purpose.</p>	<p>Equipment Stationery Books Support worksheets.</p>
<p>Portfolio 3 (1 sess)</p>	<p>Planning the full ‘making’ process Forming sequential plans</p>	<ul style="list-style-type: none"> • <u>The Big Picture</u> <ul style="list-style-type: none"> ○ <u>TO</u>: Design & make a small, hand tool for use in the garden. • <u>Learning Objective</u> <ul style="list-style-type: none"> ○ <u>WE ARE</u>: Creating a record of our making activity. • <u>Success Criteria</u> <ul style="list-style-type: none"> ○ Good – Put stages in order to describe the making of a simple 	<p>Support: Written statements – cut / stick version of planning.</p> <p>Challenge: Create a flow-chart showing more than one</p>	<p>Books Stationery Printed statement sheets Prompts available on whiteboard.</p>



		<p>garden tool. Include safety points.</p> <ul style="list-style-type: none"> ○ Better – Describe checks you would make at each stage to ensure quality. ○ Best – Extend the ‘record’ into a ‘plan’ covering steps not yet completed. <ul style="list-style-type: none"> • Extension: Create a flow-chart showing alternative ways to progress for one or more stages. 	<p>route through the making process – adapted to respond to problems or difficulties</p>	
<p>Portfolio 4 (1 sess)</p>	<p>Evaluating / Assessing</p> <ul style="list-style-type: none"> ○ Evaluating product ○ Evaluating process ○ Evaluating own approach <p>Tutor assessment of practical work (completion of self-assessment pro-forma)</p>	<ul style="list-style-type: none"> ○ The Big Picture <ul style="list-style-type: none"> ○ <u>TO:</u> Manufacture quality products using metalworking skills ○ Learning Objective <ul style="list-style-type: none"> ○ <u>WE ARE:</u> Evaluating our practical work using agreed criteria. ○ Success Criteria <ul style="list-style-type: none"> ○ Good – Identify good points and areas for development. ○ Better – Analyse use of process in production of tool <ul style="list-style-type: none"> • Best – Identify aspects of own work which were successful or could be improved. 	<p>Support: Evaluation worksheets allow pupils to graduate their response from sentence starters to free-text response. Challenge: Extended free-text including analysis of own approach to work</p>	<p>Evaluation worksheets Keywords summary</p>
<p>Theory 1 (2 sess)</p>	<p>Introduction to materials – ferrous metals.</p>	<ul style="list-style-type: none"> • The Big Picture <ul style="list-style-type: none"> – <u>TO:</u> Design & make a small, hand tool for use in the garden. 	<p>Support:</p>	<p>Equipment Stationery Books</p>



	<ul style="list-style-type: none"> Notes on ferrous metals, types, origins and uses. Focus on properties of metals – pure and alloys. Heat treatment of metals is covered. Forming of metals – hot/cold. Surface treatments to prevent corrosion Types of paint and application Alloys as a means of enhancing material properties 	<ul style="list-style-type: none"> Learning Objective <ul style="list-style-type: none"> <u>WE ARE:</u> Finding out about materials. Success Criteria <ul style="list-style-type: none"> Good – Use notes & drawings to show understanding of ferrous and non-ferrous metals. Better – Show an understanding of the properties of these materials and why they are used. Best – Show understanding of the way other materials are combined with metals to create effective products. 	<p>Keyword walls provide spelling support for keywords</p> <p>Challenge: Pupils annotate notations with additional information or conclusions.</p>	<p>Support worksheets. KS3 Textbooks</p> <ul style="list-style-type: none"> Pg 30 Pg 35 <p>Metals presentation</p>
<p>Theory 2 (2 sess)</p>	<p>CAD Skills Workshop</p> <ul style="list-style-type: none"> Using CAD as a tool for presenting work/ideas Advantages of CAD to industry Types of CAD package and strengths CAD/CAM & CNC 	<ul style="list-style-type: none"> The Big Picture <ul style="list-style-type: none"> <u>TO:</u> Design & make a small, hand tool for use in the garden. Learning Objective <ul style="list-style-type: none"> <u>WE ARE:</u> Using CAD to draw tools. Success Criteria <ul style="list-style-type: none"> Good – Follow instructions to create a trowel blade using CAD. Better – Create all parts of the trowel using a CRATE for each. Best – Apply thin/thick line rule and add colour using the software. 	<p>Support Detailed 'how-to' sheet covers step by step drawing of the tool allowing pupils to work independently.</p> <p>Challenge Pupils extend their work adding additional features to their drawings showing understanding of manufacturing concepts.</p>	



<p>Practical 1 (1 sess)</p>	<p>Practical work</p> <ul style="list-style-type: none"> • Use forge / heat treatment to form mild steel to create tool components • Use lathe to form ergonomically suitable handle • Use hand tools to create a tool blade using a template pattern. 	<ul style="list-style-type: none"> • The Big Picture <ul style="list-style-type: none"> ○ <u>TO</u>: Design & make a small, hand tool for use in the garden. • Learning Objective <ul style="list-style-type: none"> ○ <u>WE ARE</u>: Using metalwork techniques to manufacture a simple garden tool. • Success Criteria <ul style="list-style-type: none"> ○ Good – Use at least one process (as shown) to make a tool. ○ Better – Complete one process and use a 2nd. ○ Best – Complete two processes to a high standard. 	<p>Support: Level of work is provided by guided decisions on complexity of tool being manufactured. Tutor support.</p> <p>Challenge: Level of work is provided by guided decisions on complexity of tool being manufactured. Tutor support.</p>	<p>Forge/blow torch Vices Hand-fitting tools Mild steel Softwood blanks Self-assessment proforma</p>
<p>Practical 2 (2 sess)</p>	<p>Practical work</p> <ul style="list-style-type: none"> • Use forge / heat treatment to form mild steel to create tool components • Use lathe to form ergonomically suitable handle <p>Use hand tools to create a tool blade using a template pattern.</p>	<ul style="list-style-type: none"> • The Big Picture <ul style="list-style-type: none"> ○ <u>TO</u>: Design & make a small, hand tool for use in the garden. • Learning Objective <ul style="list-style-type: none"> ○ <u>WE ARE</u>: Using metalwork techniques to manufacture a simple garden tool. • Success Criteria <ul style="list-style-type: none"> ○ Good – Use at least one process (as shown) to make a tool. ○ Better – Complete one process and use a 2nd. ○ Best – Complete two processes to a high standard. 	<p>Support: Level of work is provided by guided decisions on complexity of tool being manufactured. Tutor support.</p> <p>Challenge: Level of work is provided by guided decisions on complexity of tool being manufactured. Tutor support.</p>	<p>Forge/blow torch Vices Hand-fitting tools Mild steel Softwood blanks Self-assessment proforma</p>



<p>Practical 3 (2 sess)</p>	<p>Practical work</p> <ul style="list-style-type: none"> • Use forge / heat treatment to form mild steel to create tool components • Use lathe to form ergonomically suitable handle <p>Use hand tools to create a tool blade using a template pattern.</p>	<ul style="list-style-type: none"> • The Big Picture <ul style="list-style-type: none"> ○ <u>TO</u>: Design & make a small, hand tool for use in the garden. • Learning Objective <ul style="list-style-type: none"> ○ <u>WE ARE</u>: Using metalwork techniques to manufacture a simple garden tool. • Success Criteria <ul style="list-style-type: none"> ○ Good – Use at least one process (as shown) to make a tool. ○ Better – Complete one process and use a 2nd. ○ Best – Complete two processes to a high standard. 	<p>Support: Level of work is provided by guided decisions on complexity of tool being manufactured. Tutor support.</p> <p>Challenge: Level of work is provided by guided decisions on complexity of tool being manufactured. Tutor support.</p>	<p>Forge/blow torch Vices Hand-fitting tools Mild steel Softwood blanks Self-assessment proforma</p>
<p>Practical 4 (3 sess)</p>	<p>Practical work</p> <ul style="list-style-type: none"> • Use forge / heat treatment to form mild steel to create tool components • Use lathe to form ergonomically suitable handle <p>Use hand tools to create a tool blade using a template pattern.</p>	<ul style="list-style-type: none"> • The Big Picture <ul style="list-style-type: none"> ○ <u>TO</u>: Design & make a small, hand tool for use in the garden. • Learning Objective <ul style="list-style-type: none"> ○ <u>WE ARE</u>: Using metalwork techniques to manufacture a simple garden tool. • Success Criteria <ul style="list-style-type: none"> ○ Good – Use at least one process (as shown) to make a tool. ○ Better – Complete one process and use a 2nd. ○ Best – Complete two processes to a high standard. 	<p>Support: Level of work is provided by guided decisions on complexity of tool being manufactured. Tutor support.</p> <p>Challenge: Level of work is provided by guided decisions on complexity of tool being manufactured. Tutor support.</p>	<p>Forge/blow torch Vices Hand-fitting tools Mild steel Softwood blanks Self-assessment proforma</p>



<p>Practical 5 (3 sess)</p>	<p>Practical work</p> <ul style="list-style-type: none"> • Use forge / heat treatment to form mild steel to create tool components • Use lathe to form ergonomically suitable handle <p>Use hand tools to create a tool blade using a template pattern.</p>	<ul style="list-style-type: none"> • The Big Picture <ul style="list-style-type: none"> ○ <u>TO</u>: Design & make a small, hand tool for use in the garden. • Learning Objective <ul style="list-style-type: none"> ○ <u>WE ARE</u>: Using metalwork techniques to manufacture a simple garden tool. • Success Criteria <ul style="list-style-type: none"> ○ Good – Use at least one process (as shown) to make a tool. ○ Better – Complete one process and use a 2nd. ○ Best – Complete two processes to a high standard. 	<p>Support: Level of work is provided by guided decisions on complexity of tool being manufactured. Tutor support.</p> <p>Challenge: Level of work is provided by guided decisions on complexity of tool being manufactured. Tutor support.</p>	<p>Forge/blow torch Vices Hand-fitting tools Mild steel Softwood blanks Self-assessment proforma</p>
<p>Practical 6 (4 sess)</p>	<p>Practical work</p> <ul style="list-style-type: none"> ○ Extension to tool making ○ OR ○ Bottle opener project ○ Marking out / accuracy ○ Cutting, filing forming 	<ul style="list-style-type: none"> • The Big Picture <ul style="list-style-type: none"> ○ <u>TO</u>: Manufacture quality products using metalworking skills • Learning Objective <ul style="list-style-type: none"> ○ <u>WE ARE</u>: Using metalwork techniques to manufacture a simple product. • Success Criteria <ul style="list-style-type: none"> ○ Good – Use at least one process (as shown) to make a tool. ○ Better – Complete one process and use a 2nd. ○ Best – Complete two processes to a high standard. ○ 	<p>Support: Level of work is provided by guided decisions on complexity of tool being manufactured. Tutor support.</p> <p>Challenge: Level of work is provided by guided decisions on complexity of tool being manufactured. Tutor support.</p>	<p>Forge/blow torch Vices Hand-fitting tools Mild steel Softwood blanks Self-assessment proforma</p>



End of Module 1				
<p>Theory 1 (2 sess)</p>	<p>Project Introduction - Moulding</p> <ul style="list-style-type: none"> • Introduction to material – thermoforming plastic • Introduction to process – vacuum forming • Design brief / specifications • Generating novel ideas in response to brief. 	<ul style="list-style-type: none"> • The Big Picture <ul style="list-style-type: none"> ○ <u>TO:</u> Design & make a vacuum formed mould for a novelty chocolate. • Learning Objective <ul style="list-style-type: none"> ○ <u>WE ARE:</u> Learning about material and processes then using these to help generate design ideas. • Success Criteria <ul style="list-style-type: none"> ○ Good – Notes about material & process / Range of ideas ○ Better – Detailed notes & a wide range of ideas. ○ Best – Fully annotated ideas describing process used to manufacture. 	<p>Support: Vacuum forming notes cut/stick support sheet</p> <p>Challenge: Detailed flow-chart showing making process and check stages</p>	<p>https://www.youtube.com/watch?v=KGAuunWs8io</p> <p>https://www.youtube.com/watch?v=AEZy1usgd3Y</p> <p>Stationary KS3 textbooks Books Plain paper Vacuum forming notes support sheet</p>
<p>Practical 1 (2 sess)</p>	<p>Practical work</p> <ul style="list-style-type: none"> • Demonstration of cutting techniques • Understanding of ‘draft’ angle for moulding • Assembly of layered mould. 	<ul style="list-style-type: none"> • The Big Picture <ul style="list-style-type: none"> ○ <u>TO:</u> Design & make a vacuum formed mould for a novelty chocolate. • Learning Objective <ul style="list-style-type: none"> ○ <u>WE ARE:</u> Using workshop tools / equipment to create a mould ‘plug’ • Success Criteria <ul style="list-style-type: none"> ○ Good – Simple but accurate single layer mould assembled. ○ Better – Detail added by combining materials. 	<p>Support: Peer or tutor support but, at basic level, task is simple and within the reach of pupils.</p> <p>Challenge: Add complexity to mould, combine materials.</p>	<p>MDF Blanks Vices Files Coping saw Hegner Abrasive paper HIPS Double sided tape Vacuum former</p>



		<ul style="list-style-type: none"> ○ Best – Fully detailed mould is progressed to vacuum formed stage. 		
<p>Practical 1 (2 sess)</p>	<p>Practical work / Evaluation</p> <ul style="list-style-type: none"> • Final shaping of moulds for pupils not yet completed • Vacuum forming of group work • Filling with chocolate – link to any other molten material • Evaluation of effectiveness of design and process. 	<ul style="list-style-type: none"> • The Big Picture <ul style="list-style-type: none"> ○ <u>TO:</u> Design & make a vacuum formed mould for a novelty chocolate. • Learning Objective <ul style="list-style-type: none"> ○ <u>WE ARE:</u> Using workshop tools / equipment to create a mould 'plug' • Success Criteria <ul style="list-style-type: none"> ○ Good – Detail added by combining materials. ○ Better – Fully detailed mould is progressed to vacuum formed stage. ○ Best – Product & processes are evaluated ○ Extension – package for product is drawn/made. 	<p>Support: Peer or tutor support but, at basic level, task is simple and within the reach of pupils.</p> <p>Challenge: Add complexity to mould, combine materials. (See also extension.)</p>	<p>MDF Blanks Vices Files Coping saw Hegner Abrasive paper HIPS Double sided tape Vacuum former</p>
End of Mould project – Start of Dream House project				
<p>Portfolio 1 (2 sess)</p>	<p>Introduction & Design</p> <ul style="list-style-type: none"> • Social and financial impact of housing shortage • Potential solutions • Maths involved in house purchases 	<ul style="list-style-type: none"> • The Big Picture <ul style="list-style-type: none"> ○ <u>TO:</u> Design & model a concept for a tiny house • Learning Objective <ul style="list-style-type: none"> ○ <u>WE ARE:</u> Using drawing methods to present/communicate concept ideas • Success Criteria 	<p>Support: Resources – squared paper, drawing frames, ISODRAW guides</p> <p>Challenge: Use formal drawing methods See Success Criteria</p>	<p>AW Tiny house video PPT Dream house Paper Books Stationary</p>



	<ul style="list-style-type: none"> • Tiny House movement – reasons why • Examples (e.g. AW) • Concept idea generation techniques 	<ul style="list-style-type: none"> ○ Good – A range of tiny-house concept designs ○ Better – Annotated and rendered presentation. ○ Best – Floor plans drawn with sense of scale. 		
<p>Portfolio 2 (2 sess)</p>	<p>Design / Concepts / CAD</p> <ul style="list-style-type: none"> • Development of basic designs • Use of scale (inc. common sizes of household items) • 3D development to include use of colour, background and architectural detail • CAD may be utilised if available. 	<ul style="list-style-type: none"> • The Big Picture <ul style="list-style-type: none"> ○ <u>TO</u>: Design & model a concept for a tiny house • Learning Objective <ul style="list-style-type: none"> ○ <u>WE ARE</u>: Using drawing methods to present/communicate concept ideas • Success Criteria <ul style="list-style-type: none"> ○ Good – A range of tiny-house concept designs ○ Better – Annotated and rendered presentation. ○ Best – Floor plans drawn with sense of scale. 	<p>Support: Resources – squared paper, drawing frames, ISODRAW guides</p> <p>Challenge: Use formal drawing methods See Success Criteria</p>	<p>AW Tiny house video PPT Dream house Paper Books Stationary</p>
<p>Portfolio 3 (2 sess)</p>	<p>Model making</p> <ul style="list-style-type: none"> • Introduction (with examples) of modelling as a design concept. • Reasons for modelling – inc. virtual experience models 	<ul style="list-style-type: none"> • The Big Picture <ul style="list-style-type: none"> ○ <u>TO</u>: Design & model a concept for a tiny house • Learning Objective <ul style="list-style-type: none"> ○ <u>WE ARE</u>: Using drawing methods to present/communicate concept ideas • Success Criteria 	<p>Support: Resources – squared paper, drawing frames, ISODRAW guides</p> <p>Challenge: Use formal drawing methods See Success Criteria</p>	<p>Dyson modelling video clip. Card Modelling foam Paper Tape Adhesives</p>



	<ul style="list-style-type: none"> • Rapid prototyping and application. • Examples of architectural design models used • As extension – pupils apply and develop 3D models of final design ideas. 	<ul style="list-style-type: none"> ○ Good – A range of tiny-house concept designs ○ Better – Annotated and rendered presentation. ○ Best – Floor plans drawn with sense of scale. ○ Extension – Models made, to scale, using suitable materials. 		
Portfolio 4 (2 sess)	<p>Model making</p> <ul style="list-style-type: none"> • Introduction (with examples) of modelling as a design concept. • Reasons for modelling – inc. virtual experience models • Rapid prototyping and application. • Examples of architectural design models used • As extension – pupils apply and develop 3D models of final design ideas. 	<ul style="list-style-type: none"> • The Big Picture <ul style="list-style-type: none"> ○ <u>TO</u>: Design & model a concept for a tiny house • Learning Objective <ul style="list-style-type: none"> ○ <u>WE ARE</u>: Using drawing methods to present/communicate concept ideas • Success Criteria <ul style="list-style-type: none"> ○ Good – A range of tiny-house concept designs ○ Better – Annotated and rendered presentation. ○ Best – Floor plans drawn with sense of scale. ○ Extension – Models made, to scale, using suitable materials. 	<p>Support: Resources – squared paper, drawing frames, ISODRAW guides</p> <p>Challenge: Use formal drawing methods See Success Criteria</p>	<p>Dyson modelling video clip. Card Modelling foam Paper Tape Adhesives</p>
Portfolio 5 (3 sess)	<p>Problem Solving Design</p> <ul style="list-style-type: none"> • Applying standardised techniques to problem solving • SCAMPER <p>Iterative design</p>	<ul style="list-style-type: none"> • The Big Picture <ul style="list-style-type: none"> ○ <u>TO</u>: Develop brief and specification in response to a problem • Learning Objective 	<p>Support Pupils supported by tutor and by structured task presentation</p> <p>Challenge</p>	<p>PG Online L4</p> <p>Worksheets Presentations Plain paper</p>



		<ul style="list-style-type: none"> ○ <u>WE ARE:</u> Using design strategies to generate design ideas. ● Success Criteria <ul style="list-style-type: none"> ○ Good – Produce design brief and specifications ○ Better – Use techniques to generate solutions ○ Best – Iterate those ideas and develop ● 	Design task is open-ended leading to extension opportunities.	
Theory 1 (2 sess)	Technical Knowledge - Structures & Forces <ul style="list-style-type: none"> ○ Forces <ul style="list-style-type: none"> ○ Compression ○ Tension ○ Bending ○ Torsion ○ Basic structural forms <ul style="list-style-type: none"> ○ Arches ○ Beams ○ Cell structures ○ Combining structural forms and application Practical application – spaghetti towers	<ul style="list-style-type: none"> ● The Big Picture <ul style="list-style-type: none"> ○ <u>TO:</u> Understand how forces act in structures ● Learning Objective <ul style="list-style-type: none"> ○ <u>WE ARE:</u> Identifying how structures resist forces acting on them ● Success Criteria <ul style="list-style-type: none"> ○ Good – Complete notes on forces & structures ○ Better – Use diagrams to illustrate forces in structures ● Best – Analyse existing structures and the forces at work 	Support: Pupils grouped in mixed ability for practical activity. Challenge: Team competition to build highest tower	Structures presentation Paper Books Stationary Rulers
Theory 2 (2 sess)	Technical Knowledge <ul style="list-style-type: none"> ● Drawing skills <ul style="list-style-type: none"> ○ Orthographic ○ 2 point perspective ○ Isometric 	<ul style="list-style-type: none"> ● The Big Picture <ul style="list-style-type: none"> ○ <u>TO:</u> Revise and extend drawing skills – formal drawing methods. ● Learning Objective <ul style="list-style-type: none"> ○ <u>WE ARE:</u> Using drawing methods to present/communicate 	Support All pupils work through progressively more challenging tasks. Challenge	Drawing paper Books Stationary Presentation Drawing techniques worksheets



	<ul style="list-style-type: none"> ○ Rendering ○ Cross section ● Mouse Design task 	<ul style="list-style-type: none"> ● Success Criteria <ul style="list-style-type: none"> ○ Good – Accurate application of drawing skills ○ Better – Use of thing/thick line & other techniques ○ Best – Mouse design task completed 	Apply techniques learned to a design challenge	ISOSKETCH Mouse timeline Design challenge PG Online L3
21 & 22	Extension or End of Term activities			
23 & 24	Extension or End of Term activities			