

Year Group	Safety	Inspiration	Making	Evaluation
<i>Previous Knowledge and Skills (to be tested)</i>	* Know how to cut and join materials with varying thicknesses.	* Know where inspiration comes from, have researched pictures or objects to support designs.	* Created levers in card or paper.	* Comments of on their designs and suggest changes.
5	<p>Know that...</p> <ul style="list-style-type: none"> * Introduction - Health & Safety Rules apply when working in the workshop. * Health & Safety is everywhere and it is the law to keep people safe in various activities. * There are Health & Safety rules of using scissors and being aware of paper cuts. * There are Health & Safety of using butterfly pins and mechanisms. <p>Know how to...</p> <ul style="list-style-type: none"> * Work safely and follow all rules in the workshop. * Carry scissors and use them to cut materials safely. * Identify risks during tasks. 	<p>Know that...</p> <ul style="list-style-type: none"> * Smart materials change with their environment, they respond to changes in light, heat, chemicals or moisture. * Phosphorescent(Glow in the dark) smart materials absorb light and glow in the dark. * Thermochromic materials react to heat changes and change colour. * Designers need inspiration to create new products and ideas. <p>Know how to...</p> <ul style="list-style-type: none"> * Know how to use Smart materials to enhance the visual appearance of a product. * Identify SMART materials. * Use glow in the dark pigments to mix with a base paint. 	<p>Know that...</p> <ul style="list-style-type: none"> * There are different types of linkages and levers to create movement in paper mechanisms. * Linkages are card strips joining one or more levers to produce the type of movement required. * A lever is a stiff bar which moves around a pivot. The pivot can be loose or fixed. * A loose pivot - is a paper fastener that joins card strips together. * A Fixed pivot - is a paper fastener that joins card strips to the backing card. * In a lever and linkage mechanism, the 'input' is where the user pushes or pulls a card strip. The 'output' is where one or more parts of the picture move. <p>Know how to...</p> <ul style="list-style-type: none"> * Use simple paper mechanisms to create movement in a card/paper engineered product. * Create a moving robot using linkages, pivots and levers. 	<p>Know that...</p> <ul style="list-style-type: none"> * Evaluation is important to identify faults and improve products. * All products have to be evaluated before going on sale. * Evaluation shows what the best parts of a final outcome are. <p>Know how to...</p> <ul style="list-style-type: none"> * Evaluate existing products that use linkages and levers. * Test and compare different linkages and levers. * Evaluate and improve test models for making. * Evaluate a final design for making and design elements.

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6	<p>Know that...</p> <ul style="list-style-type: none"> * Health & Safety Rules apply when working in the workshop, even when using paper or card. * There are Health & Safety rules when using needles to sew textiles. <p>Know how to...</p> <ul style="list-style-type: none"> * Store needles safely and securely in a work area. * Be able to sew safely and be aware of risks of using sharp objects. * Be able to fold and cut paper and be aware of paper cuts to the skin. 	<p>Know that...</p> <ul style="list-style-type: none"> * Robert Sabuda is an American artist/designer born in 1965. He is famous for creating Pop up designs, he mostly uses V-folds. * Hundertwasser used organic and irregular shapes to create his unique architecture. He disliked using straight lines. <p>Know how to...</p> <ul style="list-style-type: none"> * Create a STEP mechanism. * Create a V-fold BEAK mechanism. * Create a MOUTH mechanism. * Modify existing mechanisms. * Create a moving paper/card mechanism using cuts, folds, hinges. * Create a textile design inspired by Hundertwasser. * Create a colourful paper collage in the style of Hundertwasser. 	<p>Know that...</p> <ul style="list-style-type: none"> * Mechanisms are parts in a device to create motion. * There are different types of pop up mechanisms to create movement in paper and card engineering: Step, Beak, Mouth, and V Folds. * Symmetry - One-half is the mirror image of the other half. * Applique is sewing or gluing different textile shapes and patterns onto a larger textile to form a design. * There are different stitches for decorative and joining methods. * Sewing can be used to decorate textiles and not just sew pieces together. <p>Know how to...</p> <ul style="list-style-type: none"> * Create Pop up Mechanisms and use them to create a Pop up page. * Create mock ups to visualise the final pop up. * Create a design using inspiration to plan an applique textile design. 	<p>Know that...</p> <ul style="list-style-type: none"> * Evaluation is important to identify design influences. * All products have to be tested for safety before going on sale. * Some products are not suitable for young children due to small parts. * Evaluation shows whether a product suits the purpose of what it is used for. <p>Know how to...</p> <ul style="list-style-type: none"> * Evaluate Hundertwasser designs and use for techniques in applique. * Evaluate the style of Hundertwasser to inform knowledge of the style. * Test, compare and improve different pop up mechanisms. Evaluate and improve mock ups. * Evaluate a final design for making and design elements.

			<ul style="list-style-type: none"> *Use collage in creating an applique textile decoration. *Cut out felt pieces using a design. * Use a range of stitching techniques, cross, back, blanket, ladder. 	
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7	<p>Know that...</p> <ul style="list-style-type: none"> *Identify new hazards using healthy & safety rules in the workshop. *All workshops follow Health & Safety at work Act to protect people from harm. *Acrylic is more fragile and brittle compared to plywood and breaks easily when using the coping saws. * People are the most dangerous thing in the workshop. *Pillar drills can make materials spin out of control - clamps must be used. *Heat resistant gloves must be work for the strip heater. 	<p>Know that...</p> <ul style="list-style-type: none"> *Andy Warhol and Roy Lichenstein are Pop artists. *Pop Art originated from popular culture in 1950s, including comics, advertising. *Acrylic has limitations to what is can be used for, it cannot be painted easily. Designs need to reflect this. <p>Know how to...</p> <ul style="list-style-type: none"> *Research and use the work of a given designer to create designs for an acrylic product. *Be inspired by the needs of the product user or the function of a product. 	<p>Know that...</p> <ul style="list-style-type: none"> *What the bench vice, coping saw, disc sander, fret saw and types of files are. *There are differences between using files, the disc sander and sandpaper to shape and smooth edges. *Files are different shapes to fit into different areas of materials. * Files can be identified by their shape. *There are differences between cutting acrylic with a coping saw or a fret saw. *Drills are used to make different sized holes in various materials. *Liquid solvent glue is used to combine acrylic pieces by temporarily changing the properties. *Vinyl can be cut by hand or using a sticker cutter. *The area of a rectangle is width x length, this helps to see what will be wasted. 	<p>Know that...</p> <ul style="list-style-type: none"> *Evaluation of existing plywood products helps to see what other people like and dislike. *Evaluation helps to decide how to develop a final idea. *Evaluation checks a product is suitable for the user. <p>Know how to...</p> <ul style="list-style-type: none"> * Evaluate a product against the design brief - intention of the product. *Check design ideas suit the intended user - peer evaluation sought.

	<p>*Breakages to equipment must always be reported. Do not touch broken blades.</p> <p>Know how to...</p> <p>*Use all the above for making acrylic products safely and know how to prevent risks for each one. (See above knowledge and Making)</p>	<p>*Draw 2D designs for acrylic products using Pop Art inspiration.</p>	<p>*Thermoplastics can be reheated and their shape can be changed. *Thermoset plastics cannot be reheated and changed in shape.</p> <p>Know how to...</p> <p>* Make templates to glue onto materials, compared to drawing around them. *Use the coping saw to neatly cut straight and curved lines in acrylic material. *Use a bench vice and coping saw to neatly cut straight and curved lines in acrylic. *Use the fret saw to neatly cut straight and complex shapes in acrylic material. *Identify and use different files: flat file, half rounded file and rat tail file to shape acrylic pieces. *Use sandpaper to smooth the edges of my pieces of acrylic.. *Use the disc sander to improve the shape of acrylic materials. *Use the pillar drill or hand drill to drill holes in acrylic pieces. *Use and compare dry with wet and dry sand paper to smooth the edges of acrylic, *Cut vinyl pieces for decoration. *Use liquid solvent glue to combine acrylic pieces.</p>	<p>*Check for quality of finish and safety of a plywood product.(No rough edges) *Compare and evaluate my ideas in writing and decide which one is the most suitable.</p>
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Know that...

- *New materials and equipment have new hazards in the workshop.
- *Importance of recalling healthy & safety rules in the workshop - may have missed lesson or new pupils.
- *Businesses face prosecution if they don't follow Health & Safety at work Act.
- *The laser cutter must not be used unsupervised - risks of fumes and fire.
- *Machines and tools are inspected every lesson and breakages must be reported to workshop staff. Tools should all be accounted for to avoid misuse and risks.
- *Machine with moving parts can entangle hair, tie and jewellery.
- *Goggles and aprons must be worn during all practicals, they are essential PPE to protect the eyes from foreign objects.
- *Breakages to equipment must always be reported. Do not touch broken blades.
- *The vacuum former must not be left unattended - risk of burns or fire.
- *Smoke must be extracted before removing materials from the laser cutter.

Know how to...

Know that...

- *Many products are designed using different artists, designers as inspiration.
- *2D designs show a flat product, 3D drawing show extra dimensions (views) of a products.
- *Research of designers work are design influences.
- * Know the difference between using computers to draw 2D and hand drawn 2D CAD designs.

Know how to...

- *Use design influences from specific artists/designers to plan, create and evaluate acrylic product designs.
- * Draw 3D isometric drawings for a 3D shape.
- *Draw 2D designs by hand and in CAD using inspiration from designers.

Know that...

- *Make templates to draw a design straight onto the material.
- *What the laser cutter, bench vice, bench hook, coping saw, disc sander, fret saw and types of files are.
- *Plywood is bought in different thicknesses, different tools cut different thicknesses.
- *There are differences between cutting plywood with a coping saw, fret saw and tenon saw.
- *Know the purpose of the bench hook and the bench vice.
- *The fret saw has a quicker outcome.
- *Use wood filler to fill holes
- *Working out the area of a piece of material helps with calculating the cost. $\text{Cost} = \text{area} \times \text{price cm}^2$.
- *The laser cutter uses CAD - Computer Aided design to cut shapes in different materials.
- *The laser cutter has a neater finish compared to cutting with a coping saw or fret saw.
- *CAM is computer aided Manufacture.
- *Acrylic paint has properties that make it more suitable for painting wood compared to poster paint which washes off.

Know how to...

- *Identify and use different files: flat file, half rounded file, rat tail file and needle files to shape plywood materials.
- *Use a tenon saw safely with a bench hooky to cut plywood pieces straight.
- *Select when to use the coping saw to safely cut plywood pieces.
- *Select when to use the fret saw to safely cut plywood pieces.

Know that...

- *Evaluation of existing acrylic products helps to see the pros and cons of the material.
- *Evaluation of a specific designer helps to choose purposeful design influences which are modern and appealing to others.
- *Evaluation checks a product is suitable for the user and the environment it will be used in.

Know how to...

- * Evaluate a product against the design brief - intention of the product.
- * Check design ideas suit the intended user - peer evaluation sought.
- *Check for quality of finish and safety of a plywood product.(No rough edges)
- *Compare and evaluate my ideas in writing and decide which one is the most suitable.

	<p>*Use all the above for making plywood and acrylic products safely and know how to prevent risks for each one. (See above knowledge and Making)</p>		<p>*Explain advantages and disadvantages of materials and equipment. *Use CAD software to design pieces to be cut or engraved on the laser cutter. *Assemble components and join materials with panel pins and pein hammer and PVA glue. *Use the disc sander to improve the shape of plywood materials and when materials are not suitable for this machine. *Use sandpaper and wood filler to improve the quality of the finished product. *Mix and apply acrylic paint neatly and mask off areas of a design.</p>	
<p>Future Knowledge and Skills (Y9 to GCSE)</p>	<p>*Select and safely use various tools and equipment independently. * Know that risks change with the materials being prepared.</p>	<p>*Use inspiration to create research for design portfolios. *Develop products, graphics and textile designs using inspiration from a given range of designers - GCSE specification.</p>	<p>*Develop design sheets for design portfolios and exam questions using 2D, 3D and CAD design.</p>	<p>*Write an evaluation using the intended brief. *Evaluate research from various sources. *Evaluate the designs of past products and designers. *Suggest improvements to a finished product using SCAMPER.</p>