Subject:	Product Design	Year:	7	Ability:	Mixed ability

Term / Date(s) **Yr.7 rotation (approximately 12 lessons)**

Unit title	Resistant Materials Keyring
Topic overview	Students are to develop key practical skills through the use of workshop tools & equipment; working with timber (manufactured board) and of working with plastic (acrylic). Students are to develop understanding of the design process, generation and communication of ideas and knowledge of material properties and uses
Key knowledge	Student will learn to; 1. Understand biomimicry and how to use inspiration – to help generate more creative design ideas 2. Understand what a design brief is - to guide the design and making process successfully 3. Create a specification of a given product using ACCESSFM - to identify product success criteria 4. Produce initial idea drawings - to communicate ideas clearly in 2D 5. Evaluate design ideas against a generated specification - to identify ideas to model & suggest potential improvements 6. Produce CAD drawings in 2D & 3D - to be used to link with CAM (laser cutter/3D printer) to manufacture outcomes* 7. Understand the types of timber (softwoods/hardwoods/manufactured boards) and their key properties and uses - to analyse the advantages and disadvantages of materials available 8. Understand the types of plastics (thermoplastics/thermosets) and their key properties and uses - to analyse the advantages and disadvantages of materials available 9. Use a range of workshop tools and equipment (ruler/tri-square/tenon saw/sanding machine/pillar drill/coping saw/adhesive/pliers/cordless drill) - to manufacture an accurate, high-quality outcome
Link to previous knowledge	• How to draw basic 2D shapes and present neatly to communicate design ideas (KS1) • How to use a ruler to measure and mark accurately (KS1) • How to add colour to improve the presentation of ideas (KS1)
Transferrable knowledge (skills)	• How to create a design specification • How to create design ideas in 2D • How to evaluate design ideas against a design specification • How to use key IT software to create design ideas and save work correctly to user areas • How use workshop tools & equipment accurately
Key vocabulary (definitions)	• Design brief / Biomimicry / Specification / ACCESSFM / Evaluation against the specification • 2D drawing • Softwoods / hardwoods / manufactured boards • Thermoplastics / thermosets • Ruler / Pencil / Sharpie / Coping saw / Sanding machine / Pillar drill / Cordless drill
Key assessments	• Assessment Percentage Grade - percentage achieved in a written assessment (this indicates how much is recalled & remembered) • Project Skills Grade - a ‘Project Skill Grade’ which gives an overview, on average, of how well students are performing with the project aspects of the course.

Subject:	Product Design	Year:	8	Ability:	Mixed ability

Term / Date(s) **Yr.8 rotation (approximately 20 lessons)**

Unit title	Passive Speaker
Topic overview	Students are to develop communication/presentation knowledge & skills through the creation of a range of drawing styles for a given product (a mobile phone). Students are to develop design and making knowledge & skills through the creation of a working timber product (a passive speaker).
Key knowledge	Student will learn to; 1. Create a product analysis of given products using ACCESSFM - to identify positive & negative product features 2. Create a specification of given products using ACCESSFM - to identify product success criteria 3. Produce isometric drawings - to communicate ideas in 3D 4. Produce orthographic drawings - to communicate ideas in 2D, from a range of different viewpoints 5. Understand the types of timber (softwoods/hardwoods/manufactured boards) and their key properties and uses - to analyse the advantages and disadvantages of materials available 6. Understand the types of timber (thermoplastics/thermosets) and their key properties and uses - to analyse the advantages and disadvantages of materials available 7. Understand the advantages of a template & jigs and use provided examples accurately - to manufacture a consistent, accurate shapes 8. Use a range of workshop tools and equipment (ruler/tri-square/tenon saw/sanding machine/pillar drill/coping saw/adhesive/pliers/cordless drill) - to manufacture an accurate, high-quality outcome
Link to previous knowledge	• How to draw basic 2D shapes and present neatly to communicate design ideas (KS1) • How to use a ruler to measure and mark accurately (KS1) • How to add colour to improve the presentation of ideas (KS1) • How to add shading to improve realism (Yr.7 Art)
Transferrable knowledge (skills)	• How to complete a product analysis • How to create a design specification • How to generate & communicate design ideas • How use workshop tools & equipment (including templates & jigs) accurately
Key vocabulary (definitions)	• Design brief / Product Analysis / ACCESSFM / Specification • Isometric drawing / Orthographic drawing • Softwoods / hardwoods / manufactured boards • Thermoplastics / thermosets • Template / Jigs • Ruler / Tri-square / Tenon saw / Sanding machine / Pillar drill / Coping saw / Adhesive / Pliers / Cordless drill
Key assessments	• Assessment Percentage Grade - percentage achieved in a written assessment (this indicates how much is recalled & remembered) • Project Skills Grade - a ‘Project Skill Grade’ which gives an overview, on average, of how well students are performing with the project aspects of the course.

Subject:	Product Design	Year:	9	Ability:	Mixed ability

Term / Date(s) **Yr.9 rotation (approximately 12 lessons)**

Unit title	Sustainable lamp
Topic overview	Students are to further develop key practical skills through the use of workshop tools & equipment, working with timber (manufactured board) and electronics. Students are to develop understanding of; mechanical and electrical systems, designing for specific users and the impact of new and emerging technologies
Key knowledge	Student will learn to; 1. Recap what a design brief is - to successfully support the making process 2. Understand specific users wants and needs – to generate personalised, more successful products 3. Understand mechanical systems (types of motion/levers/linkages/cams & followers) and their key features and uses - to understand how mechanisms can be used in products 4. Understand electrical systems (inputs/processors/outputs) and their key feature and uses - to understand how electronics can be used in products 5. Understand new and emerging technologies and their impact (specifically on the environment) – to consider alternative methods of manufacture and consider their pssobiel impact 6. Use a range of workshop tools and equipment (ruler/tri-square/tenon saw/sanding machine/pillar drill/coping saw/adhesive/pliers/cordless drill) - to manufacture an accurate, high-quality outcome 7. Use a range of specialist workshop tools and equipment (soldering iron / solder) - to manufacture an accurate, high-quality outcome
Link to previous knowledge	• How to use a ruler to measure and mark accurately (Y7 & 8) • How to use workshop tools to cut, sand and assemble timber products (Y8)
Transferrable knowledge (skills)	• How to create a user profile • How to use workshop tools & equipment accurately and independently • How to use specialist tools and equipment safely
Key vocabulary (definitions)	• Types of motion / Levers / Linkages / Cams / Followers • Components / Inputs / Processors / Outputs • User needs / User wants • Ruler / Pencil / Circle template / Tenon saw / Coping saw / Sanding machine / Pillar drill / Cordless drill • Bolt & nut / Adhesive • Soldering iron / Solder / Melting point • CADCAM / automation / Raw materials / Energy use / Fossil fuels / Renawable / Recycling / Sustainability
Key assessments	• Assessment Percentage Grade - percentage achieved in a written assessment (this indicates how much is recalled & remembered) • Project Skills Grade - a ‘Project Skill Grade’ which gives an overview, on average, of how well students are performing with the project aspects of the course.