

Design Technology: Exploration of sustainable design – Year 8 - 18 lessons		
Use sustainable design principles to create a high quality upcycled bird feeder		
<p>Substantive knowledge: Practical (knowing what)</p> <p>Apply sustainable design principles to create an upcycled bird feeder.</p> <p>Communicating 3D designs</p> <p>Practical – measuring, cutting, allowing for material thickness in measurements and adapting designs.</p>	<p>Substantive knowledge: Theoretical Design/Designers</p> <p>Max McMurdo – Upcycling as sustainable design</p>	<p>Disciplinary knowledge (knowing how to)</p> <p>How applying the 6Rs of sustainability to the design process as a designer and consumer protects the earth natural resources</p>
Specialisms	Product Design/ Resistant Materials	
Materials	Card for model making prior to making, tape	Pallet wood, PVA, nails, plastic bags for fusing and assortment of recycling materials to choose from
Tools to create the product	Scissors, pencils, rulers. Small rip saws, coping saws, mini pillar drill for pilot holes, hammers, greaseproof paper and iron for plastics fusing	
Key vocabulary	Sustainability, product life cycle, renewable and non-renewable resources, recycle, reuse, repair, rethink, refuse, reduce, fusing, functionality, disassembly.	
Reading	Encourage the ability to read instructions quickly and accurately – Keep instructions concise and ensure students understand the vocabulary	
Golden threads – research, design, make, evaluate	Research sustainable design and bird feeders Design an upcycled bird feeder make an upcycled bird feeder evaluate the finished bird feeder against the given brief	
Cultural capital	Exploration of sustainable design for the benefit of individuals and groups including ones other than their own	
What prior knowledge needs to be revisited to underpin the learning of new content	Basic materials and processes knowledge to be able to assess the sustainability of each and its suitability for the purpose	
Common Misconceptions	<ul style="list-style-type: none"> - Failure to appropriately plan and measure meaning the materials don't fit together correctly. This is sometimes best learnt by making the mistake as the practical experience is more powerful than being told - Students often focus on recycling and disposal of the product as sustainability rather than throughout the lifecycle (cradle to the grave) of the product 	
How can the content be extended for HPA?	<ol style="list-style-type: none"> 1. More independence in practical tasks encouraged with the aid of instructions 2. More technically difficult products encouraged 3. Higher level of technical terminology and greater descriptive detail expected in evaluation 	
How can the content be adapted for SEND	<ol style="list-style-type: none"> 1. Writing frames if required for sustainability theory 2. Instructions/ tasks chunked on cream paper with wide spaces between words if required 	

	<ol style="list-style-type: none"> 3. More support in practical work may need to be given depending on the nature of the need. 4. Some may produce a less technical outcome in practical work depending on the nature of the need 5. Evaluation outline if required
<p>What is the homework?</p>	<ol style="list-style-type: none"> 1. Edpuzzle Product lifecycle quiz 2. Edpuzzle 6Rs quiz 3. Present a chosen sustainable design from the internet or personal photograph with annotation 4. Collection of suitable materials for the bird feeder enhancement 5. Edpuzzle 6Rs quiz part 2 6. Edpuzzle product lifecycle quiz part 2
<p>Lesson Objectives and misconceptions</p> <ol style="list-style-type: none"> 1. Draw and annotate the product life cycle. Introduce Max McMurdo and PLA as examples <i>Students fail to add enough detail to annotations</i> 2. Apply the 6R's of sustainability to the Hanger made in year 7 3. Apply sustainability knowledge to bird feeders as a class. 4. Research bird feeders and stick prints in books. These may be provided depending on resources available. 5. Practice drawing and enhancement techniques. 6. Apply drawing and enhancement techniques to initial design ideas <i>Designs often have flat bottoms or lack crating technique or crate lines are too strong</i> 7. Mark out and cut bird feeder model 8. Assemble bird feeder model <i>Scale is often an issue in the model</i> 	<p>Assessment and success criteria</p> <ol style="list-style-type: none"> 1. Self and peer assessment using checklist stuck into their books as plenary. <i>Students should be able to explain the product lifecycle and have sufficient information on the drawing.</i> 2. Written teacher feedback. <i>Students should be state how the hanger effects the environment.</i> 3. Exit quiz – in their opinion which of the feeders is more important and why. <i>Students should be able to explain what makes the feeders more or less sustainable with some reference to the 6Rs and/or the product lifecycle</i> 4. Peer assessment – <i>Students should have a range of bird feeder designs from which to draw inspiration for their own designs</i> 5. Written teacher feedback. <i>Students should be able to draw a cube with thick/thin lines and a background</i> 6. Peer assessment using checklist. <i>Students should produce a minimum of 2 design ideas using the techniques shown</i> 7. Self-assessment as a plenary. <i>Students should cut out the card parts of the bird feeder model with some accuracy</i> 8. Self-assessment checklist. <i>Students should have completed a card model of the bird feeder</i>

DT Intent - Developing students to be informed consumers, provide life skills for adulthood, including leisure and mental health, and for a wide range of careers

<ol style="list-style-type: none"> 9. Create cutting list and mark out wood for bird feeder allowing for wood thickness. <i>Students struggle to allow for wood thickness</i> 10. Cut pallet wood for bird feeder. <i>Students struggle to cut straight</i> 11. Smooth wood for bird feeder 12. Assemble wood for bird feeder and apply finishes 13. Test and evaluate plastics fusion techniques 14. Explore cans as an upcycling material 15. Test and evaluate decoupage technique 16. Adapt bird feeder design to include techniques evaluated 17. Apply techniques to bird feeder 18. Evaluate bird feeder 	<ol style="list-style-type: none"> 9. Teacher verbal feedback. <i>Students should have created a cutting list for the bird feeder with some accuracy – there may still be errors.</i> 10. Self-assessment using checklist. <i>Students should have cut wood parts for the bird feeder</i> 11. Self-assessment. <i>Wood should be straight and smooth ready for joining</i> 12. Self-assessment using checklist. <i>Bird feeder should be complete</i> 13. Teacher verbal feedback. <i>Students should be able to evaluate the outcome of the plastic fusion technique</i> 14. Teacher verbal feedback. <i>Students should be able to evaluate the outcome of the plastic fusion technique</i> 15. Teacher written feedback. <i>Students should be able to evaluate the outcome of the plastic fusion technique</i> 16. Self-assessment checklist. <i>Students should add to use at least one of the techniques they have evaluated on the bird feeder</i> 17. Teacher verbal feedback. <i>Students should aim to apply at least one of the techniques they have evaluated on the bird feeder</i> 18. Final grade given. <i>Students should evaluate the materials, processes, quality of finish and sustainability.</i>
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