NHSG Key Stage 3 Unit Overview for Year 7 Product Design Practical Lessons

Scheme of Learning	
Learning outcomes	The aim of our Y7 Product Design practical curriculum is for students to work safely and become more confident when using tools and equipment when making products. **Subject Content:** **Alien Bookmark Project** Draw a design using CAD software Change the line colour for cutting and graving parts of the final product **Skills Set:** • Use CAD/CAM to draw and make an alien bookmark **Box Project** • Making butt joint, comb joint and mitre joint • Using tools and machinery safely Skill set: Ability to make a wooden box from a strip of pine measuring 500 x 45 x 8mm using a wood joint. This requires development of the following skills: • Calculating the dimensions of your box • Marking out the pieces needed to make the box accurately • Cutting and filing joints • Achieving a high-quality finish though sanding and filings holes in box before applying painted decorative finish • Application of theory knowledge when making • Working independently
Key Questions	**Alien Bookmark Project** • How can you change the line colours of the CAD drawing for cutting and engraving? • How can you check your CAD drawing for errors? • How could you improve if you were to use CAD/CAM when making products? **Box Project** • How do you make a butt, mitre, comb joint? • How could the lid be secured to the box? • How could the decorative finish be applied to your box?

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	• How do you achieve a high-quality finish on your box? • How could you improve if you were to make the box again?
Knowledge **What key concepts are covered?** **What key skills are developed?** **What key terminology is learned (i.e. glossary)?**	**<u>Practical products</u>** • Alien bookmark • Wooden box **<u>Key terminology:</u>** Alien bookmark: CAD/CAM, annotation, evaluation, laser cutter Box project: isometric drawing, dimensions, butt joint, mitre joint, comb joint, rendering, high quality finish
Ongoing Assessment	**<u>Self-marking using assessment criteria grid:</u>** Students to consider how they worked in each of the following categories and then understand the skills or elements of practical work that should be a target for their next project. Misconceptions- Wood classification, calculating measurements incorrectly, mixing up correct names of equipment. **Alien Bookmark** Use of alien theme, alien shape, alien details, shape of bookmark, overall finish, working independently **Wooden box** Shape of box, accuracy of shape, joint used, type of lid, fit of lid and base, compartments, holes, gaps and sanded edges, working independently, painted decoration
Key Assessment	Practical skills are self-assess and suggest improvements to their practical work in Y7 and are expected to further refine and improve their skills over KS3. How will we know that pupils can answer the key question? Students will have made a box and their progress is dependent on their independence, the quality of outcomes, application of decoration and complexity of box shape. Knowledge, skills, understanding, application? Application of theory knowledge is assessed through the theory test at the end of term.
Clear sequencing of content	Theory activities lead into practical work e.g. learning about joining materials together Practical demonstrations in lessons prior to practical so correct use of tools and equipment can be selected and students can see how to do each skill Practical lessons build on skills as the project progresses and student's confidence grows i.e. make the sides of the box, add a base, secure the lid to the box, add compartments, apply the painted decoration

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Links to Careers	Civil Engineer, Mechanical Engineer, Aeronautical Engineer, Robotics Engineer, Systems Engineer, Architect, Landscape Architect, Industrial Designer, Interior Designer, Graphic Designer, Video Game Designer
Diversity and Inclusion	• Gender neutral themes given: aliens, famous works of arts • Examples of named artists from different cultures and with disabilities whose work could be used as inspiration when decorating the wooden box
Support	• Examples of practical products • Method sheets on how to make wood joints • Small group demonstrations for skills
Challenge	Practical challenge arises in the complexity of the students design and the skill required to deliver a high-quality product that matches their initial design ideas. For example, a more complex wooden box is likely to include mitre joints or dovetail joints.