

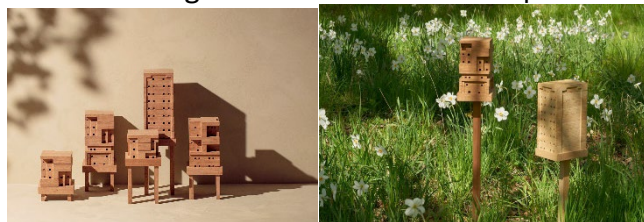
Archbishop Beck Catholic College Long Term Plan
Product Design
Year 7

In year 7 students will be given a contextual problem and a pre-made solution. Students will understand that designers use a contextual problem to start off research and a range of ideas to decide on a solution. Students will then investigate what a good product looks like, and then apply this to the manufacture of a pre-planned simple product. Students will additionally be introduced to the design concept of Biomimicry, how nature inspires innovation.

Students will be taught the names and uses of tools, equipment, and machinery so they understand what tools are needed to make a simple product. PPE is also introduced; students will learn the names of different PPE as well as be able to recognise the different symbols which tell them when and where to wear PPE. Students will understand the hazards associated with each tool and machine, so they can independently choose the correct PPE when making. Students will be introduced to new skills and processes that allow them to manufacture such as marking out, cutting, and finishing. Students will learn how to quality assure each stage of making to correct their mistakes and understand, for example, if they do not measure correctly, what the implications might be? Student will be taught knowledge of woods. They will learn the names uses and properties, so students understand why wood is used to make products.

Bee House Project

Students will design and make a 'Dream Bee House' inspired by Designer Tanita Klein. Our young designers will be commissioned to make sculptural aesthetically pleasing bee houses that are functional to encourage solitary bees into our new Wellbeing Garden at Archbishop Beck.



"It was important for me that Bee Home is aesthetically pleasing and almost feels like you've added a sculpture to your garden or your balcony," she continued. "This project really exemplifies how design can do good for both people and their environment." - Tanita Klein

Students will be introduced to problem solving for a client and considering aesthetics in their design alongside practicalities and ergonomics for practical use for a bee.

Students will develop practical skills using handheld tools such as the coping saw and flat file and will additionally experience using the scroll saw and the belt sander machinery.

Year 7

Capital Cultural Experiences throughout the Academic Year	Learning Characteristics instilled in the curriculum	Career Opportunities
<p>For each group on every rotation x 3 (Project lasts 9/10 weeks)</p> <p>Suggested trips:</p> <ul style="list-style-type: none"> • Science and industry Museum Manchester • LEGOLAND Discovery Centre - maths, science engineering, robotics and problem solving • Conway Centres Delamere - Forest school, den building 	<p>Confidence Collaboration with whole school project developing the Wellbeing Garden. Problem solving to answer a project brief. Working independently using tools and machinery. Realising a design concept to made product and viewing it in a public space.</p> <p>Positive Appreciation of other students work through peer assessment and viewing work in a public space. Generating purposeful work for the Wellbeing Garden. Awareness of environmental issues and working towards a positive cause to increase the bee population in the UK.</p> <p>Respectful Mindful and respectful of each other's workspaces and products. Developing understanding of a practical workshop and using tools and machinery correctly and safely with the correct PPE.</p>	<ul style="list-style-type: none"> • Product designer • Joiner • Carpenter • Sculptor • Exhibition designer • Furniture designer • Interior and spatial designer • Advertising art director • Automotive engineer • Furniture conservator/restorer • Graphic designer • Materials engineer • Procurement manager • Product manager • Production designer, theatre/television/film

Metacognition Methods applied in Teaching

- Activate prior knowledge at the beginning of every lesson through consolidation discussions and tasks.
- Conceptual thinking through problem solving and lateral thinking tasks as mini designers and inventors.
- Modelling practical and design skills through peer demonstrations.
- Scaffolding design activities to encourage students thinking processes and ability to reflect and design a range of options, for example through SCAMPER.
- Metacognitive reflection tasks to reflect on the students' creative pieces.

Archbishop Beck Catholic College Long Term Plan

Product Design Year 8

Students will expand their areas knowledge and understanding of Product Design from woodwork in year 7 by being introduced to plastic manipulation. Students will have the opportunity to invent a unique design and problem solve the needs of their target audience. Students will be taught to avoid design fixation and explore natural shapes to influence design ideas.

Students will be expected to remember the names through recapping of tools and machinery and use them more independently. Health and safety will be recapped, and PPE re-explored. Students will be taught about different manufacturing processes associated with batch and mass production and the efficient working of them and how this relates to the environment. Students will use this information to make a Computer Aided Design (CAD) and Manufacture (CAM) created product. Students will be taught how to use 2d design and the laser cutter and use knowledge learnt to understand the advantages of making a product using CAD and CAM. Students will learn in depth about Plastics to understand why plastics are often used in CAD and CAM produced products. Students will know the names, uses and properties of plastics, and the impact they have on the environment. Students will be able to select the correct plastics to make their product knowing its strengths and weaknesses.

Device Stand Project

Students will expand their areas knowledge and understanding of Product Design from year 7 by developing their own device stand using plastic manipulation. Students will have the opportunity to invent a unique design for a stand of their choice and problem solve the needs of their target audience. They will first design and invent a prototype before developing a net and manipulating their Perspex on the strip heater. Students will additionally

widen their areas of knowledge in Product Design by being introduced to CAD and CAM by producing a design on 2D Design and engraving their stand on the laser cutter.



Year 8

Capital Cultural Experiences throughout the Academic Year	Learning Characteristics instilled in the curriculum	Career Opportunities
<p>For each group on every rotation x 3 (Project lasts 9/10 weeks)</p> <p>Suggested trips:</p> <ul style="list-style-type: none"> • Liverpool John Moore's university (Technology dept. to see the various CAD CAM machines in operation) • LEGOLAND Discovery Centre - maths, science engineering, robotics and problem solving 	<p>Confidence, Build on the skills developed in previous projects and be able to research products and understand why they are different. Identify a target market and develop design and evaluating skills in more depth. Problem solving to answer a project brief. Working independently using tools and machinery.</p> <p>Positive Widening student's product design experiences by introducing them to plastic manipulation and CAD. Opportunities to develop designs on the laser cutter and vinyl printer to enrich students STEM learning.</p> <p>Respectful Mindful and respectful of each other's workspaces and products. Developing understanding of a practical workshop and using tools</p>	<ul style="list-style-type: none"> • CAD technician • Clothing/textile technologist • Colour technologist • Exhibition designer • Furniture designer • Interior and spatial designer • Product designer • Advertising art director • Automotive engineer • Graphic designer • Materials engineer • Product manager • Production designer, theatre/television/film

	and machinery correctly and safely with the correct PPE.	
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Metacognition Methods applied in Teaching

- Activate prior knowledge at the beginning of every lesson through consolidation discussions and tasks.
- Conceptual thinking through problem solving and lateral thinking tasks as mini designers and inventors.
- Modelling practical and design skills through peer demonstrations.
- Scaffolding design activities to encourage students thinking processes and ability to reflect and design a range of options, for example through SCAMPER.
- Metacognitive reflection tasks to reflect on the students' creative pieces.

Archbishop Beck Catholic College Long Term Plan Product Design Year 9

In year 9 students will be expected to interpret a context and write their own brief and specification based on a problem to solve. Students will focus on learning more technical knowledge of mechanisms and electronic components. This will be to widen their knowledge and understand that most products are machines and that they can be broken down into systems. Students will know what a system is, what the names and uses of different mechanisms are such as CAMS. Know the names and uses of electronic components such as LED, diodes, capacitor. Understand how micro-controllers work and about input and output components. Students will use this knowledge to form a range of ideas that meet a specification. To manufacture a prototype of their best idea students will be introduced to the iterative design process of modelling, testing, evaluation, to understand what problems might occur and how a product can be adapted and improved. The students will know how to use card and know that it is a suitable material to use for modelling. Students will further knowledge of testing products using feedback.

Mood Lamp Project



Students will combine their knowledge and practical skills from years 7 and 8 to make a Mood Lamp which uses the use of mechanism and electronic components. Students will consider their target market in more depth to design and create a bespoke lighting piece.

Year 9

Capital Cultural Experiences throughout the Academic Year	Learning Characteristics instilled in the curriculum	Career Opportunities
<p>Suggested trips:</p> <p>Opportunities to experience future career opportunities through visiting Liverpool's Royal Court Scenic Art and Set Construction workshops.</p> <p>Visit from Kapla club construction STEM workshop.</p>	<p>Confidence, Build on the skills developed in previous projects, creating a design which will work for them. Independently selecting and be able to research products and understand why they are different. Identify a target market and develop design and evaluating skills in more depth. Problem solving to answer a project brief. Working independently using tools and machinery.</p> <p>Positive Widening student's product design experiences by encouraging the students to develop individual designs through combining woodwork with plastic manipulation and CAD. Opportunities to develop designs on the laser cutter and vinyl printer to enrich students STEM learning.</p> <p>Respectful Students will have a more detailed understanding of the world around</p>	<ul style="list-style-type: none"> • CAD technician • Clothing/textile technologist • Colour technologist • Exhibition designer • Furniture designer • Interior and spatial designer • Product designer • Advertising art director • Automotive engineer • Graphic designer • Materials engineer • Product manager • Production designer, theatre/television/film • Joiner • Carpenter • Sculptor

	them and understand that resources are limited and need to be protected. Students should be aware that when they critique work that their opinion could cause positive or negative impacts so they must be mindful of this.	
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Metacognition Methods applied in Teaching
<ul style="list-style-type: none">• Activate prior knowledge at the beginning of every lesson through consolidation discussions and tasks.• Conceptual thinking through problem solving and lateral thinking tasks as mini designers and inventors.• Modelling practical and design skills through peer demonstrations.• Scaffolding design activities to encourage students thinking processes and ability to reflect and design a range of options, for example through SCAMPER.• Metacognitive reflection tasks to reflect on the students' creative pieces.