Archbishop Beck Catholic College Medium Term Plan for

Product Design

Year 10

Students will engage in more aspects of practical study skills due to lack of time in workshops which were unavailable during the previous academic year. Year 9 students had no access to the specialist rooms for product design, which has had an impact on their practical skills set and knowledge of materials, techniques and processes and manufacturing skills. These are vital skills and knowledge that we need to embed to guarantee success at GCSE. Students therefore will be given the opportunity to do a mini project to embed the correct skills before beginning their NEA at the end of the year. We will begin with basic skills and tool use and then move onto experimenting with manufacturing processes. These tasks will accompany the corresponding theory areas covered in the week by week sequencing so students will build knowledge of the material area and the skills used when working with those materials. This will be ongoing over the school year, enabling us to establish the student's skills and knowledge before moving onto the NEA at the end of the year.

Autumn Half Term 1	Half Term 2	Key Vocabulary/Reading Opportunities
Topic Areas to be covered: History of Product Design Classic Designs and Retro designs Market Pull and Technology Push & Continuous Improvement Production Systems & Quality Assurance Systems Product Evolution Sustainability Issues Packaging & Labelling Flat Pack Furniture Product Maintenance & Human Factors (intro)	**Topic Areas to be covered:** Human Factors (Physiological factors, Anthropometrics & Ergonomics) (Working triangles, Adjustment, Psychological factors & Touch, taste and smell) (Sound and sight, Sociological factors & Disability) (Access, Safety & Dietary needs) (Anthropometrics, Ergonomics, Inclusive design, Stereotypes & Ergonome) Anthropometric Data Branding Paper & Board Types of Paper & Board Timber and its natural characteristics Timber (General information) Hardwoods, Softwoods & Manufactured boards Manufactured boards (Types & uses) Hardwoods & Softwoods (Types and uses) Metals	**Key Vocabulary:** Materials, Design, Energy Properties, Technologies, Footprint, Green issues, Investigation, Process. **Reading Opportunities:** looking at the work of others and how they had been influenced. Researching of the highlighted sections/ units of work.

	Ferrous metals (2 sheets of types & uses) Non Ferrous metals (Types & uses) Non Ferrous metals & Alloys (Types & uses) Alloys Plastics Thermosetting plastics (Info & uses) Thermoplastics (Info & uses)	
Spring Half Term 3	**Half Term 4**	**Key Vocabulary/Reading Opportunities**
Topic Areas to be covered: Ceramics Textiles (Fibres, Yarns & Fabrics) Natural and Regenerated Fibres Synthetic Fibres Food Materials/ Food Groups/ Properties of Food Materials Systems and Control Components & Control Components Electronic Components/ Electrical Components Mechanical Components Cranks and Cams Springs and Linkages Gears and Pulleys Levers (Class 1) Levers (Class 1 & 3)	**Topic Areas to be covered:** New Materials, Smart Materials, New and Smart Materials Health and Safety systems Manufacturing/ Scales of production Computer Technology/ Production Systems Quality Assurance Systems Using CAD, Using CAM Using ICT Measuring and Checking Casting and Moulding Casting / Die Casting Moulding Plastics (Injection, Blow & Rotational) Forming (Drop Moulding/ Drape Forming, Felt Blocking & Vacuum Forming Injection Moulding and Extrusion, Blow and Compression Moulding, Rotational Moulding, Vacuum Forming and Line Bending	**Key Vocabulary:** Materials, Design, Energy Properties, Technologies, Footprint, Green issues, Investigation, Process, Tolerances, Finishes, Forces, Stresses, Prototype. **Reading Opportunities:** looking at the work of others and how they had been influenced. Researching of the highlighted sections/ units of work.
Summer Half Term 5	**Half Term 6**	**Key Vocabulary/Reading Opportunities**

Topic Areas to be covered:	**Topic Areas to be covered:**	**Key Vocabulary:** Materials, Design, Energy Properties, Technologies, Footprint, Green issues, Investigation, Process, Tolerances, Finishes, Forces, Stresses, Prototype, Scales of production. **Reading Opportunities:** looking at the work of others and how they had been influenced. Researching of the highlighted sections/ units of work.
Extrusion, Bending & Forging Shearing and Die Cutting Cutting and Bending Sheet Material / Forging Metals Sawing/ Chiselling and Planing/ Drilling Holding Devices/ Jigs and Fixtures Marking Out Materials Hammering Planing and Drilling Screw Cutting Milling and Routing Turning Milling, Routing and Turning Abrading	Cooking Food and Temperature Changes in Food Heat Treatment of Materials Joining Timber (Joints) Joining Timber (Screws and Nails & Knock-down Fittings) Joining Timber Soldering and Welding Welding, Soft and Hard Soldering Joining Metals and Plastics Adhesives Surface Finishes (Finishes & Paints) (Varnishes and Lacquers, Oils and Polishes, Wood Stains & Sanding Sealer) (Plastic Dip-Coating and Powder Coating, Anodising, Plating and Galvanising) Polishing Materials (Polishing, Polishing Timber, Polishing Metals, Polishing Plastics) Surface Finishes Polishing Materials Glazing Printing (Lithography & Screen Printing) Printing (Flexography and Block Printing & Embossing)	

Year 10

Wider learning experiences to support this subject.	Learning Characteristics instilled in the curriculum	Career Opportunities
Visits to The World museum Liverpool V&A London The Design museum London Manchester Science Museum	**Confidence** Be able to use research to inform own design ideas Develop design ideas to inform a final decision successfully **Positive** Embrace the creative world around the students locally and national and if possible internationally Consider the diverse target markets that they need to design for. **Respectful** Consider a wide variety of cultures to assist research of themes Be environmentally considerate when working within the industry Ethical issue within all industries.	Designer, Architect, Work in the product design industry, Computer design, CAD CAM.

Metacognition Methods applied in Teaching

Archbishop Beck Catholic College Medium Term Plan for **Product Design**

Year 11

Students will engage in more aspects of practical study skills due to lack of time in workshops which were unavailable during the previous academic year. Year 10 students had limited access to the specialist rooms last year and were taught in an English room, this has had an impact on their practical skills set and knowledge of materials, techniques and processes and their manufacturing skills. Students needs will be assessed through verbal one to one tutorial to establish each individual student's coursework needs. Regular feedback will be given to enable individual support for the students coursework needs. Current guidance suggests that alterations are to be made to the grading of the NEA so this will be incorporated where applicable. The deadline for component will be Half Term 3.

Autumn Half Term 1	Half Term 2	Key Vocabulary/Reading Opportunities
Topic Areas to be covered: NEA Students to be given individual feedback and targets to help with work	**Topic Areas to be covered:** NEA Students to be given individual feedback and targets to help with work	**Key Vocabulary:** Assessment objectives, Sophisticated, Refined, develop, investigation, perceptive, rigorous, source, response, focused, coherent, consistency, review, purposeful, selection, **Reading Opportunities:** looking at the work of others and how they had been influenced. Researching of the highlighted sections/ units of work/ sections of the NEA.
Spring Half Term 3	**Half Term 4**	**Key Vocabulary/Reading Opportunities**
Topic Areas to be covered: NEA and mock exams Students to be given individual feedback and targets to help with work	**Topic Areas to be covered:** Carry out any last minute refinement of NEA project before formal assessment an marking Revision of all theory areas covered previously	**Key Vocabulary:** Assessment objectives, Sophisticated, Refined, develop, investigation, perceptive, rigorous, source, response, focused, coherent, consistency, review, purposeful, selection,

		Reading Opportunities: looking at the work of others and how they had been influenced. Researching of the highlighted sections/ units of work/ sections of the NEA. Reading of revision materials
Summer Half Term 5	**Half Term 6**	**Key Vocabulary/Reading Opportunities**
Topic Areas to be covered: Revision of all theory areas covered previously	Course complete	**Key Vocabulary:** Materials, Design, Energy Properties, Technologies, Footprint, Green issues, Investigation, Process, Tolerances, Finishes, Forces, Stresses, Prototype, Scales of production. **Reading Opportunities:** looking at the work of others and how they had been influenced. Researching of the highlighted sections/ units of work/ sections of the NEA. Reading of revision materials

Year 11

Wider learning experiences to support this subject.	**Learning Characteristics instilled in the curriculum**	**Career Opportunities**
Visits to: The World museum Liverpool V&A London The Design museum London Manchester Science Museum	**Confidence** Be able to use research to inform own design ideas Develop design ideas to inform a final decision successfully **Positive**	Designer, Architect, Work in the product design industry, Computer design, CAD CAM.

	Embrace the creative world around the students locally and national and if possible internationally Consider the diverse target markets that they need to design for. **Respectful** Consider a wide variety of cultures to assist research of themes Be environmentally considerate when working within the industry Ethical issue within all industries	

Metacognition Methods applied in Teaching