Intent, sequencing, and narrative thread

Department: Technology and Art: **Construction**

<table>
<tr><td colspan="3">What is the intent statement for you subject? What does the discipline offer young people? What is the subject's purpose? This should be a short, snappy statement.</td></tr>
<tr><td></td><td colspan="2">Design and Technology prepares students for the modern word by focusing on innovating solutions to a problem.
Students will be empowered to work with a wide range of materials, ingredients, modern technology and components in order for them to design and manufacture creative solutions to a wide range of problems and scenarios.</td></tr>
<tr><td colspan="3">What are the core aims of the curriculum? What key knowledge do you want students to have at the end of their learning journey?</td></tr>
<tr><td rowspan="3">Year 7</td><td colspan="2">Core Aims:
• Understand safe working practices within the Technology environment using substances, materials, food, tools and equipment.
• Developing an understanding for healthy choices in nutrition.
• Introducing basic electronic principles and key component function.
• Develop presentation, drawing and communication skills through sketching, using drawing equipment and computer aided design.
• Introducing an understanding of mechanical systems through linkages and cams.
• Introducing practical skills in wood working using hand tools and machinery.
• Introducing food hygiene and basic food handling skills.
• Working with care and precision to accurately cut, measure and weigh materials</td></tr>
<tr><td>Key knowledge:</td><td>Key skills:</td></tr>
<tr><td>• Nutrients:
• Food Safety
• Eat well guide.
• 3D sketching skills – isometric, oblique and 2-point perspective.
• Health and safety
• Mechanisms- linkages, Cams.
• Tool names and functions.
• Understanding the purpose of a specification</td><td>• Knife skills.
• Weighing, cutting, marking measuring accurately – use of templates.
• Heat control in food – use of hob, oven and grill.
• Soldering.
• Computer Aided Drawing
• 3D drawing.
• Cutting, smoothing and drilling wood.</td></tr>
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<tr><td rowspan="3">Year 8</td><td colspan="2">Core aims:</td></tr>
<tr><td colspan="2">• Developing an understanding of material properties in wood, metal and plastic through modelling and experimenting.
• Introducing programmable electronics.
• Developing communication skills through 3D drawing and computer aided design.
• Sustainability, environmental impact, life cycle of plastic and metal.
• Sustainable energy.
• Sustainability in Food- Food Miles, seasonality.
• Develop nutritional knowledge by understanding special dietary needs.
• Increase time management skills by creating more complex dishes.
• Working as a team</td></tr>
<tr><td>Key knowledge:
• Sustainable energy and finite resources – advantages and disadvantages.
• Life cycle of plastics and aluminium- effect on the environment.
• Developing an understanding of the properties of Thermoplastics and alloys.
• Developing evaluative skills to make considered choices.
• Understanding the effect of friction- use of bearings and pulleys.
• Using electrical generator.
• Designing for function
• Developing their own technical specifications to meet the needs of a user.
• Dietary needs, Seasonality and food miles.</td><td>Key skills:
• Cutting screw threads.
• Forming: -Heat forming thermoplastics and bending alloys.
• CAD using Autodesk Fusion.
• Programming using the BBC Micro bit
• Communication skills- working as a team; development of drawing skills; 3D modelling ideas;
• Dough, batter and cake making consistency;
• Kneading, proving and shaping.
• Planning and time management.
• Developing practical cooking skills.</td></tr>
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<table>
<tr><td rowspan="3">Year 9</td><td colspan="2">Core aims:</td></tr>
<tr><td colspan="2">

Develop practical skills to create complex dishes.
To understand and apply time plans to meet a brief and specification.
To be able to use wood working tools with care and accuracy: - measuring tools, templates.
Developing an understanding of material properties in timber, ferrous and non-ferrous materials.
Further develop CAD drawing skills to create 3D and 2D images which can be manufactured through laser cutting.
Develop an understanding of wood finishes.
Sustainability in Timber- FSC.
Scales of Production.
Metal processes- Heat Treatment, wasting using the lathe,
Creating a thread through tapping a hole.

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<tr><td>Key knowledge:</td><td>Key skills:</td></tr>
<tr><td>

Food Safety: - Apply it to making plans.
Food quality, temperature control; Contingency plans for change and adaptation.
Softwoods, Hardwood, manufactured boards – properties and sustainability-FSC
Wood finishes.
Processes: - lathe, heat treatment, metal properties.
Scales of manufacture.
Specifications- How to write accurately and create a brief.

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Using chisels safely and accurately.
Developing CAD skills in 2D design and Auto Desk.
Understanding how to use the lathe correctly to parallel turn, knurl, taper turn, facing and drilling.
Heat treatment- hardening and tempering.
Casting using moulds.
Cutting a screw thread with a die.
Spot welding.
Quality testing- seasoning and using temperature probes.
Quality control checking.
Independence when looking at contingencies.

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<tr><td rowspan="3">Year 10</td><td colspan="2">Core aims: Construction</td></tr>
<tr><td colspan="2">• identifying and describing ideas and concepts in the built environment
• explaining concepts in the built environment
• evaluating evidence, ideas and concepts in the built environment
• comparing and contrasting ideas, concepts in, and evidence related to, the built environment.</td></tr>
<tr><td>Key knowledge:
• The construction sectors.
• The life cycle of the built environment.
• Understanding the types of buildings and structures.
• Technologies and materials used in the construction industry.
• Knowing building structures and forms.
• Health and safety within the construction industry.
• Understand sustainable construction methods.
• Trades, employment and careers within the construction industry.</td><td>Key skills:
• Research skills – legislation for the construction industry
• Presentation skills – for potential clients
• Literacy skills – for reporting findings
• Entry level carpentry skill for practical tasks.
• Health and safety in the workshop</td></tr>
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<table>
<tr><td rowspan="3">Year 11</td><td colspan="2">Core aims: Construction</td></tr>
<tr><td colspan="2">• Learners will develop knowledge and understanding of, and skills in, constructing the built environment.

• Learners will present their written and any drawing work of their three final outcomes. Carpentry (stud wall), Domestic electrics (simple lighting circuit) and ceramic tiling (tiled splashback)

• learners are required to present evidence, of their construction work using coloured photographic images.</td></tr>
<tr><td>Key knowledge:</td><td>Key skills:</td></tr>
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	Interpreting technical sources of Information. Planning and organising work space. Identifying resource requirements for given task. Calculating the materials required. Writing and setting success criteria. Prepare for construction tasks. Removing and disposing of materials. Carrying out practical tasks. Promoting health and safety in the workshop.	Measuring, marking and cutting accurately. Reading technical drawings. Quality control checking. Using tools safely and accurately. Working to a time plan. Presenting finished product to a high standard.

Year 12	**Core aims: Construction** • Students will produce a concept design for a development proposal and gained knowledge and practical experience of the stages and key factors that influence the design of the built environment. • They will also understand and appreciate; the existing and developing processes required to construct a range of buildings including the use of project management and quality assurance. Consideration is also given to job roles within the industry, their interrelationship and career progression.	
	Key knowledge: • The construction sectors. • The life cycle of the built environment. • Understanding the types of buildings and structures. • Technologies and materials used in the construction industry. • Knowing building structures and forms. • Health and safety within the construction industry. • Understand sustainable construction methods. • Trades, employment and careers within the construction industry. • Knowledge and understanding: professional roles of the specialised primary occupations: Architect, Engineer, Builder and Surveyor. • Institutional standards that govern the built environment. • Pre-emptive skills and strategies to ensure cost effective and timely delivery of buildings and infrastructure	**Key skills:** • Literacy and numeracy: in the carrying out of on-screen research into construction projects at the design stage • Planning and organising: in the consideration of the importance of planning and organising to construction organisations. • Personal planning and organising: in • order to prepare for the unit assessment. • Creativity and innovation: to provide alternative design solutions.

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<tr><td rowspan="3">Year 13</td><td colspan="2">Core aims:</td></tr>
<tr><td colspan="2">Understand and appreciate:
The engagement of stakeholders and communities in the development and use of the built environment. The protection of the environment and the physical structure in the use of the built environment will also be considered.
The application of Building Information Modelling in managing the design, creation and maintenance of built assets.</td></tr>
<tr><td>Key knowledge:</td><td>Key skills:</td></tr>
<tr><td>Understanding of the relationships between the client, consultants, contractors and the potential users.
Explain stakeholder interests during the RIBA plan of work.
An understanding of the BREEAM
accreditation process.
Understand the purpose of developments and the value placed upon them within a modern society.
Understand the basic principles and
benefits of BIM within the built
environment.
Understand the UK BIM Maturity Levels.
Understand the relevance of the UK
standards to be used and reviewed when working on a BIM project.</td><td>Students will also be expected to produce examples of BIM information.
Personal planning and organising: can be developed in order to assist students in their preparation for the unit assessment.
Literacy and numeracy: in considering BIM, students need to reference information from a number of sources
The study of BIM case studies could generate opportunities for the development of Literacy and
Numeracy skills in real or realistic contexts.</td></tr>
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