

Product & Building Design Intent

How will pupils build upon what they have learnt in Key Stage Two?

Based on the curricula from local primary schools, some (but not all) pupils will have studied Design and Technology. Pupils should have learnt an iterative process of designing, making and evaluating through: research; design criteria; design ideas; practical tasks; product analysis; evaluation; testing and having an understanding of the history of design.

Based on the KS2 national curriculum, primary pupils may have been introduced to design and technology through projects that apply technical knowledge of structures, mechanical systems, electrical systems and computer programming. Examples of projects in local primaries are: designing a Tudor cross-stitch, programming a moving toy, designing Ancient Egyptian artefacts and designing and building an Anderson shelter.

Why do we teach our pupils Product and Building Design?

The study of Product and Building Design at Woodlands School offers the exciting opportunity to be **inspired by designers** and engaged through its **rigorous and practical** nature as a subject. Using **creativity and imagination**, pupils design and make products that **solve real and relevant problems** within a variety of contexts, **considering their own and others' needs, wants and values**. They acquire a broad range of subject knowledge and **draw on disciplines such as mathematics, science, engineering, computing and art**. Pupils learn how to **take risks, becoming resourceful, innovative, enterprising and capable citizens**. Through the **evaluation of past and present design and technology**, they develop a **critical understanding of its impact on daily life and the wider world**. High-quality design and technology education makes an essential contribution to the **creativity, culture, wealth and well-being of the nation**.

Through the study of Product and Building Design, Woodlands pupils will:

- **Develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world**
- Build and apply a repertoire of knowledge, understanding and skills in order to **design and make high-quality prototypes and products** for a wide range of users
- **Critique, evaluate and test** their ideas and products and the work of others.

What is the key knowledge pupils will gain in Product and Building Design at Woodlands?

KS3: at KS3, we offer three design projects that cover a broad range of study closely aligned to the National Curriculum, including:

- **Year 7 Jitter Toy Project** – pupils explore material properties of plastics and manufactured boards, consider sustainability and acquire knowledge about electronic theory whilst following an iterative design process to design, make and evaluate an electronic product for a global brand, through manufacturing processes such as soldering and vacuum forming.
- **Year 8 Mechanical Toy Project** – pupils explore material properties of woods and manufactured boards, consider sustainability and acquire knowledge about motion and mechanism theory whilst following an iterative design process to design, make and evaluate a wooden product for a global brand through manufacturing processes that involve the use of wood working hand tools and machines.
- **Drawing Skills Project** – pupils explore the different types of technical drawing skills including isometric, orthographic and point perspective.

KS4: at KS4, we have selected the WJEC Level 1 / 2 architecture qualification 'Designing the Built Environment', believing it to provide the most relevant industry skills, including 3D modelling in CAD, and promotes wider ranging career aspirations, covering the following topics.

- Planning requirements for construction projects including the protection given to designated areas, the planning process for construction projects and planning consent considerations.
- Infrastructure and design including map interpretation, utility distribution, and how infrastructure affects design.
- Report writing including use of language, structure and supporting information.
- Using mathematical techniques for construction designs
- Technical drawing and rendering of plans, elevations through the language of drafting.
- 2D CAD drawing and 3D CAD modelling and rendering of construction designs.
- Structures of buildings including functions of building elements, external impacts and suitability.
- Properties of materials, how they can be changed and economic impacts.
- Sustainability of buildings including how forms of energy impact on design, how sustainable materials can be used in constructing buildings, how building materials can be sourced sustainably and how the use of buildings can be made sustainable.

How will DBE at Woodlands prepare pupils for the future?

What opportunities are there to study this subject at Key Stage Five? South Essex College offer Construction (Level 3 Extended Diploma), Seevic/Palmers offer a Diploma in Engineering (Level 3 BTEC National Extended) and Visual Design (Level 3, UAL Extended Diploma).

What related subjects can pupils study at A-Level? Seevic/Palmers offer 3D Design at A-Level. DBE also helps prepare pupils for subjects such as A-Level Art and Design, A-Level Product Design and A-Level Engineering.

How does this link with other subjects, at KS5 and beyond? To take a recognised Architecture degree you will need: five GCSEs 9-4 including English, maths and science as well as three good A-levels. Some universities prefer a maths or a science subject at A-Level. Many also require a portfolio of work, so an art & design based A-level can be helpful. Entry requirements vary so pupils must check carefully with the Architects Registration Board. Other level 3 courses (e.g. science or engineering) may be acceptable for entry to a recognised degree at some universities – pupils must check with them directly.

What employment opportunities are available relating to this subject? Architecture, building conservation, building technology and management, civil engineering, construction, planning and development, property and estate management.