Goldwyn Ashford - Design and Technology Subject Statement and Long Term Plan

Design and Technology – Statement of Intent

At Goldwyn School Design and Technology is an inspiring, rigorous and practical subject. Design and Technology encourages children to challenge to learn to think and intervene creatively to solve problems both as individuals and as members of a team. At Goldwyn School, we encourage children to use their creativity and imagination, to design and make products through sequenced learning that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. We aim to, wherever possible, link work to other disciplines such as maths, science, computing and art. The students are also given opportunities to reflect upon and evaluate their own practice, its effectiveness and are encouraged to become innovators and risk-takers.

Implementation

Through a variety of sequenced creative and practical activities, we teach the knowledge, skills and understanding needed to engage in a process of designing and making. The students work in a range of relevant contexts (for example home, school, leisure, culture, enterprise, industry and the wider environment).

When designing and making, the children are taught to:

Design

• use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups

Make

• select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing) accurately

• select from and use a wider range of materials and components, including construction materials, according to their functional properties and aesthetic qualities

Evaluate

• investigate and analyse a range of existing products

• evaluate their ideas and products against their own design criteria and consider the views of others to improve their work

Technical knowledge
• apply their understanding of how to strengthen, stiffen and reinforce more complex structures
• understand and use mechanical systems in their products
• understand and use electrical systems in their products

Key skills and key knowledge for D and T have planned to ensure sequenced progression between year groups. This also ensures that there is a context for the children's work in Design and Technology; that they learn about real life structures and the purpose of specific examples, as well as developing their skills throughout the programme of study.

Impact
We ensure the children
• 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 products for a wide range of users and critique, evaluate and test their ideas and products and the work of others
• Students will design and make a range of products. A good quality finish will be expected in all design and make activities, made appropriate to the age and ability of the student
Children learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation process they develop a critical understanding of its impact on the environment. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

All students will have the opportunity to gain accreditation in AQA awards and a tailored City and Guilds level 1 multi skills course at either certificate, extended certificate or diploma level depending on the specific needs and likes of each individual student.

Design Technology: Long Term Plan

The Design Technology Long Term Plan reflects a key focus upon Knowledge, Skills and Understanding. It is anticipated that all pupils will have the opportunity to study for a formal qualification which addresses their needs, including AQA Awards and City and Guilds. The Curriculum Plan has a clear sequence centred upon both prior learning and expectations for future learning. The work at Key Stage 3 should provide the foundation for further progress through Key Stage 4.

Term	1	2	3	4	5	6
Year 7	**Workshop safety** Looking at hazards, identifying risks, assessing risks and recognising safety signs. **Basic wood working tools.** Tool recognition, identification and use. Students given the opportunity to explore and use hand tools to cut a basic shape. **Key Learning (KSU)** -Explain their choices of tools and materials. -State why they are following a specific safety procedure.	**Introduction to Manufactured Boards** Designing and making a Photo Frame. Learning to use a pillar drill and hand tools. Testing and evaluating a product. To understand the properties of manufactured boards. **Key Learning (KSU)** -With guidance can follow basic procedures for health and safety when using machinery and hand tools. -Choose suitable and appropriate ways to assemble and join	**Designing a Games holder** Introduction to research and designing and making a product for a target market. Using Computer Aided Design software to generate ideas. **Key Learning (KSU)** -Investigate butt joints, uses and appropriateness. - supported use of 2D CAD following a simple check list. - Describe what their products are for and how they will work - Say how they will make their product suitable for their intended users - With help select tools, equipment and materials	**Designing a Games holder** Introduction to research and designing and making a product for a target market. Using Computer Aided Design software to generate ideas. **Key Learning (KSU)** - Supported use of 2D CAD following a simple check list. - Describe what their products are for and how they will work - Say how they will make their product suitable for their intended users - With help select	**Electronic Game** Introduction to electronic circuits, symbols, components and soldering. Design, make and evaluate their product. **Key Learning (KSU)** - Use a wider range of materials and components, including, mechanical and electrical components. -Health and safety regarding soldering equipment. - Independently select equipment, materials and	**Electronic Game** Introduction to electronic circuits, symbols, components and soldering. Design, make and evaluate their product. **Key Learning (KSU)** - Use a wider range of materials and components, including, mechanical and electrical components. -Health and safety regarding soldering equipment. - Independently select equipment, materials and components suitable for the task. - Make simple

		materials together. -Can classify a range of manufactured boards. -From a given range, select tools and equipment suitable for a task.	suitable for the task. - Able to measure, mark out, cut and shape materials with some accuracy	tools, equipment, materials suitable for the task. - Able to measure, mark out, cut and shape materials with some accuracy	components suitable for the task. - Make simple judgments about their products and ideas against design criteria	judgments about their products and ideas against design criteria
Year 8	**Garden project** Students will research, investigate and make a product that will encourage wildlife into domestic gardens due to habitat loss. e.g. Nesting boxes, feeders and bug hotels. **Key Learning (KSU)** -Use 2D CAD independently to create complex drawings. -Identify and solve their design problems. -Explain choices of materials and components according to their functional properties. -Make use of specialist equipment to mark out and cut materials. E.G. Marking gauge, bevel gauge, tri-square, hole saws, tenon saw and	**Garden project** Students will research, investigate and make a product that will encourage wildlife into domestic gardens due to habitat loss. E.g. Nesting boxes, feeders and bug hotels. **Key Learning (KSU)** -Use 2D CAD independently to create complex drawings. -Identify and solve their design problems. -Explain choices of materials and components according to their functional properties. -Make use of specialist equipment to mark out and cut materials. E.G. Marking gauge, bevel gauge, tri-square, hole	**Mechanisms** Students will look at linkages and levers. They will research different mechanisms and then make their own Parallel motion linkage. They will use this knowledge to produce a hinged toolbox /jewellery box. **Key Learning (KSU)** - Select appropriate tools e.g. marking gauge, tenon saw, and pillar drill, techniques, processes, equipment and machinery - Use exploded views of finger joints - Consider additional factors such as ergonomics and anthropometric needs. - Can classify ferrous and non-ferrous metals. - Use techniques that	**Mechanisms** Students will look at linkages and levers. They will research different mechanisms and then make their own Parallel motion linkage. They will use this knowledge to produce a hinged toolbox /jewellery box. **Key Learning (KSU)** - Select appropriate tools, e.g. marking gauge, tenon saw, and pillar drill, techniques, processes, equipment and machinery - Use exploded views of finger joints - Consider additional factors such as ergonomics and anthropometric needs. - Can classify ferrous	**Desk tidy project** Students will research a range of desk tidies, looking at designs through the ages and designers. Research appropriate materials and suitable wood joints for their project. **Key Learning (KSU).** - Select suitable materials considering their fitness for purpose. - Select appropriate tools, e.g. tenon saw, pillar drill, doweling jig and frame clamp. - Demonstrate resourcefulness when tackling practical problems. - Use a range of material joining techniques.	**Desk tidy project** Students will research a range of desk tides, looking at designs through the ages and designers. Research appropriate materials and suitable wood joints for their project. **Key Learning (KSU).** - Select suitable materials considering their fitness for purpose. - Select appropriate tools, e.g. tenon saw, pillar drill, doweling jig and frame clamp. - Demonstrate resourcefulness when tackling practical problems. - Use a range of material joining techniques. - Name a range of

	pillar drill. -Apply a range of finishing techniques with accuracy and skill. -Investigate the positive and negative impact that products can have in the wider world.	saws, tenon saw and pillar drill. -Apply a range of finishing techniques with accuracy and skill. -Investigate the positive and negative impact that products can have in the wider world.	involve a number of steps. - Follow procedures for health and safety and understand the risks	and non-ferrous metals. - Use techniques that involve a number of steps. - Follow procedures for health and safety and understand the risks	- Name a range of designers, and manufacturers and be able to relate their products to their own designing and making. - Apply a range of finishing techniques, including those from art and design, to a range of materials.	designers, and manufacturers and be able to relate their products to their own designing and making. - Apply a range of finishing techniques, including those from art and design, to a range of materials.
Year 9	**Ferrous and Non-Ferrous metals** In this unit students will investigate a range of different metals, properties and their uses to produce an identity tag, candlestick holder and bottle opener. **Key Learning (KSU).** - Be able to classify ferrous, non-ferrous metals. - Know about the physical properties of materials, brittleness, flexibility, elasticity, malleability, durability	**Ferrous and Non-Ferrous metals** In this unit students will investigate a range of different metals, properties and their uses to produce an identity tag. **Key Learning (KSU).** - Be able to classify ferrous, non-ferrous metals. - Know about the physical properties of materials, brittleness, flexibility, elasticity, malleability, durability and toughness. - Explain choices of	**Technical Drawing** In this unit students will learn about different aspects of technical drawing, orthographic, isometric and apparatus required to complete working drawings. **Key Learning (KSU).** - Be able to identify the difference between orthographic, isometric and oblique drawings. Identify apparatus needed to complete drawings. Understand 3D, 2D CAD. Be able to produce exploded and assembled working drawings. Use and	**Technical Drawing** In this unit students will learn about different aspects of technical drawing, orthographic, isometric and apparatus required to complete working drawings. **Key Learning (KSU).** - Be able to identify the difference between orthographic, isometric and oblique drawings. Identify apparatus needed to complete drawings. Understand 3D, 2D CAD. Be able to produce		

	and toughness. - Explain choices of materials and components according to their functional properties. - Make use of specialist equipment to mark out and cut materials. E.G. Scribers, Centre punches, Hacksaws and files.	materials and components according to their functional properties. - Make use of specialist equipment to mark out and cut materials. E.G. Scribers, Centre punches, Hacksaws and files.	understand scale.	exploded and assembled working drawings. Use and understand scale.		
Year 10	**City and Guilds** Students will look at Health and safety in the construction industry. **Key Learning (KSU)** The learner will: -Know the importance of health and safety in the construction industry. -Know how to minimise the risk of accidents caused by hazards. -Know safety signs and their categories (Prohibitive, Mandatory, Information and Warning) -Know Personal Protective Equipment (PPE).	This level 1, two year multi skills course gives learners the opportunity to: • Develop knowledge in the different trades within construction • Develop you knowledge and skills in Health & Safety practices within this industry • Help develop skill for the industry or DIY tasks at home • courses All this is achieved by the design of this a multi skilled course that is tailored to each individual, with a choice from over 20 units, completed in no particular order and it covers the main trades within construction. e.g. carpentry, plumbing, electrical insulation and painting and decorating. Each unit will cover the tools materials and the health and safety involved in completing the practical tasks.				

Year 11	**Introduction to the construction industry** Learners will look at sustainability, materials, construction methods, activities and job opportunities. **Key learning (KSU)** - Know types of construction methods used (Traditional and Modern) - Understand what sustainable construction is. - know types of activities and job opportunities in the construction Industry.	**Electrical installation** Learners will be able to identify tools and materials that are needed to complete various assessments relating to electrical installations and explore various activities and job opportunities that are trade specific. **Key Learning (KSU)** Identify L, E and N wires. Know different types of switched socket circuits (radial and ring main). Lighting circuits (1 and 2 way). Construct PVC wiring systems and cut bend, join and thread conduit.	**Electrical installation** Learners will be able to identify tools and materials that are needed to complete various assessments relating to electrical installations and explore various activities and job opportunities that are trade specific. **Key Learning (KSU)** Identify L, E and N wires. Know different types of switched socket circuits (radial and ring main). Lighting circuits (1 and 2 way). Construct PVC wiring systems and cut bend, join and thread conduit.	**Plumbing** Learners will be able to identify tools and materials that are needed to complete various assessments relating to plumbing installations and explore various activities and job opportunities that are trade specific. **Key Learning (KSU)** Learners will be able to construct frames using non- manipulative fittings, soldered and pre soldered joints. Remove and refit a radiator. Install rainwater goods and connect pipes and fittings to appliances.	**Plumbing** Learners will be able to identify tools and materials that are needed to complete various assessments relating to plumbing installations and explore various activities and job opportunities that are trade specific. **Key Learning (KSU)** Learners will be able to construct frames using non-manipulative fittings, soldered and pre soldered joints. Remove and refit a radiator. Install rainwater goods and connect pipes and fittings to appliances.	