Year 9 Big Picture – Construction

Year 9 Overview

In Year 9 the emphasis is on skills development how to combine a wider range of skills when working with metal components to produce an accurate working product. This unit plan has been developed to enable pupils to secure and demonstrate a range of practical skills, increasing in complexity and accuracy, to make a clock safely, and to apply their knowledge of equipment and materials to enable the product to function as intended.

Design and technology is an inspiring, rigorous and practical 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.

At KS3 students rotate half yearly

Autumn 01 2023 Weeks 1 – 7 (7 weeks) OCTOBER HALF TERM	***Autumn 02 2023 Weeks 8 – 15 (7 weeks) CHRISTMAS***	***Spring 01 2024 Week 16- 22 (7 weeks) FEBRUARY HALF TERM***
Content **Clock Project** • Initial Introduction to Metals • Design work and design selection • Design Development and Clock Modelling Students will learn about different metals and their properties. Students will also be able to differentiate between the three categories of metals – Ferrous, Non-Ferrous and alloys. Design 4 different clock designs which will aid them towards their development and final design. They will develop their favourite design from the four initial designs in their booklets. They will draw an orthographic drawing of their metal clock that is to scale. Students will the use the orthographic drawing to create a model of their product out of card. This will then be used to further develop their product before they make their final product.	Content **Clock Project** • Understanding metal finishes • Marking out their metal with the correct equipment and starting practical work on their clock • Continue practical work, fabricating their design • Further metal finishes Students will be taught the different finishes that can be implemented onto metal. This information will provide students with an opportunity to add their preferred finish to their metal clock. The students will also be taught and given the correct tools to make their metal clocks accurately. Once the work has been marked out correctly the students will start their practical work.	Content **Clock Project** • Complete the clock design • Understand and use riveting to join metal parts together • Use tin snips and guillotines safely to cut metal • Confidently use two different types of drill, hand and pillar, on their metal parts • Evaluation and redesign Students will complete their clock design and assemble it together using specific tools in the workshop. Students will be expected to finish their work to a high standard before evaluating their work. Students will assess their work and their peers and provide an evaluation. The evaluation will be written in their booklets which the students will then use to redesign and develop their final product.

Year 9 Big Picture – Construction

To understand the importance of accurately marking out correctly Using maths in Construction- marking out circles Production of an orthographic drawing of their clock **Skills**: Understand the properties of the materials that will be used before designs are started. Use modelling to help make reasoned decisions about what would make an appropriate design	Students will be taught how to create their clocks in the workshop by following the health and safety guidelines. Students will also be taught further metal finished that can be achieved in the workshop. This will build on the student's knowledge on the machinery we have in school and different solutions that can be added to the metal to give a professional finish. The metal finishes the students should get to know will be Plastic dip coating, Metal paint primer, galvanising The students should be able to use the correct setting out tools to mark out their metal accurately before they cut out their work. They should use their card model to decide how much metal they need and how to lay out their work. The students will continue to fabricate their clock. Riveting their work where necessary to fix parts together. They will also further their understanding of finishes looking at polishing and brushing and metal lacquer. They should know how this can affect the surface finish to change the aesthetics of the metal as well as protect it. **Skills:** Understanding of how finishes can be applied to metal to enhance their appearance and protect them against the elements. Learn new methods to join metal together using new equipment	The design they produce should be something that is more practical and suitable to make. This should be based on their real experience of using the tools and equipment and the students should be able to explain why they have made the changes they have. As a result of evaluating their work and from the experience they have gained the students should create a new revised design of their clock that will avoid or resolves any issues they confronted whilst doing their practical work The students should complete any practical work and apply an appropriate finish to their design from what they learnt. **Skills:** Practical skills with basic hand tools. Self-evaluation
Assessment Objectives This is the knowledge, application and skills assessed by the Mini test 1 Class feedback sheets to be completed based on the skills covered during the unit of work. This is to raise and rectify all the misconceptions, so students perform better **Attitude to Learning (ATL) - Data capture**	**Assessment Objectives** This is the knowledge, application and skills assessed by Mini Test 2: Class feedback sheets to be completed based on the skills covered during the unit of work. This is to raise and rectify all the misconceptions, so students perform better **Attitude to Learning (ATL) - Data capture**	**Assessment Objectives** This is the knowledge, application and skills assessed by the Big Test 1 Class feedback sheets to be completed based on the skills covered during the unit of work. This is to raise and rectify all the misconceptions, so students perform better **Attitude to Learning (ATL) & Big test % - Data capture**
Spring 02	***Summer 01***	***Summer 02***

Year 9 Big Picture – Construction

Weeks 23 – 27 (5 weeks) *EASTER*	*Weeks 28 – 33 (6 weeks)* *WHIT*	*Weeks 34 – 40 (7 weeks)*
Content **Clock Project** • Initial Introduction to Metals • Design work and design selection • Design Development and Clock Modelling Students will learn about different metals and their properties. Students will also be able to differentiate between the three categories of metals – Ferrous, Non-Ferrous and alloys. Design 4 different clock designs which will aid them towards their development and final design. They will develop their favourite design from the four initial designs in their booklets. They will draw an orthographic drawing of their metal clock that is to scale. Students will the use the orthographic drawing to create a model of their product out of card. This will then be used to further develop their product before they make their final product. To understand the importance of accurately marking out correctly Using maths in Construction- marking out circles Production of an orthographic drawing of their clock **Skills**: Understand the properties of the materials that will be used before designs are started. Use modelling to help make reasoned decisions about what would make an appropriate design	Content **Clock Project** • Understanding metal finishes • Marking out their metal with the correct equipment and starting practical work on their clock • Continue practical work, fabricating their design • Further metal finishes Students will be taught the different finishes that can be implemented onto metal. This information will provide students with an opportunity to add their preferred finish to their metal clock. The students will also be taught and given the correct tools to make their metal clocks accurately. Once the work has been marked out correctly the students will start their practical work. Students will be taught how to create their clocks in the workshop by following the health and safety guidelines. Students will also be taught further metal finished that can be achieved in the workshop. This will build on the student's knowledge on the machinery we have in school and different solutions that can be added to the metal to give a professional finish. The metal finishes the students should get to know will be Plastic dip coating, Metal paint primer, galvanising The students should be able to use the correct setting out tools to mark out their metal accurately before they cut out their work. They should use their card model to	Content **Clock Project** • Complete the clock design • Understand and use riveting to join metal parts together • Use tin snips and guillotines safely to cut metal • Confidently use two different types of drill, hand and pillar, on their metal parts • Evaluation and redesign Students will complete their clock design and assemble it together using specific tools in the workshop. Students will be expected to finish their work to a high standard before evaluating their work. Students will assess their work and their peers and provide an evaluation. The evaluation will be written in their booklets which the students will then use to redesign and develop their final product. The design they produce should be something that is more practical and suitable to make. This should be based on their real experience of using the tools and equipment and the students should be able to explain why they have made the changes they have. As a result of evaluating their work and from the experience they have gained the students should create a new revised design of their clock that will avoid or resolves any issues they confronted whilst doing their practical work The students should complete any practical work and apply an appropriate finish to their design from what they learnt.

Year 9 Big Picture – Construction

	decide how much metal they need and how to lay out their work. The students will continue to fabricate their clock. Riveting their work where necessary to fix parts together. They will also further their understanding of finishes looking at polishing and brushing and metal lacquer. They should know how this can affect the surface finish to change the aesthetics of the metal as well as protect it. **Skills:** Understanding of how finishes can be applied to metal to enhance their appearance and protect them against the elements. Learn new methods to join metal together using new equipment	**Skills:** Practical skills with basic hand tools. Self-evaluation
Assessment Objectives This is the knowledge, application and skills assessed by the Mini test 1 Class feedback sheets to be completed based on the skills covered during the unit of work. This is to raise and rectify all the misconceptions, so students perform better **Attitude to Learning (ATL) - Data capture**	**Assessment Objectives** This is the knowledge, application and skills assessed by Mini Test 2: Class feedback sheets to be completed based on the skills covered during the unit of work. This is to raise and rectify all the misconceptions, so students perform better **Attitude to Learning (ATL) - Data capture**	**Assessment Objectives** This is the knowledge, application and skills assessed by the Big Test 1 Class feedback sheets to be completed based on the skills covered during the unit of work. This is to raise and rectify all the misconceptions, so students perform better **Attitude to Learning (ATL) & Big test % - Data capture**