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| **Bridgewater High Key Stage 3 Curriculum Map** |
| Design & Technology Year 7 |



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| **Intent:6 key principles** | Approx 39 lessons | **Autumn Term 1** | **Autumn Term 2** | **Spring Term 1/2** | **Spring Term 2/1** | **Summer Term 1** | **Summer Term 2** |
| **Clarity around knowledge** | **Theme/Topic** | **Theme: Introduction to Design and Technology****Topic: Introduction Project** | **Theme: Introduction to Design and Technology****Topic: Introduction Project**  | **Theme: CAD/CAM****Topic: Crisp Packet Project** | **Theme: Woods and Plastics****Topic: Lamp Project** | **Complete Lamp or CAD/CAM Project** | **Theme: Working to a set Brief-Dragons Den Style Presentation****Topic Choices:** ‘A Home for Everyone’, ‘Waste Free’ and ‘Helping people with a Disability’ |
| **Clarity around Sequencing** | **Key Concepts** | * Understand material classification
* Understand primary processing of paper, timber and metals [raw materials]
* Recall units of measurement
* Understand what the iterative design process is
* Understand what environmental sustainability means and the 6 R’s
* Understand how to analyse an existing product
* Understand what a specification is and how to write one

  | * To be able to use rendering techniques to make designs look aesthetically pleasing and realistic
* To recognise the key feature of ‘Alessi’ Design
* Understand how to create and develop an innovative design from a set brief
* To gain some understanding of forces and structures and understand how to build a free-standing structure
* To be able to identify workshop hazards
* To be able to work safely and accurately to produce a high-quality product- keyring
* Understand how to respond effectively to teacher feedback
* To be able to use different recall and revision techniques to help them revise for tests/exams.
 | * Demonstrate understanding of CAD/CAM
* Develop understanding of CAD program 2D Design to draw a lamp top and how it links to CAM using the laser cutter.
* Understand how to respond to feedback
* Demonstrate understanding of the uses of CAD- Photoshop. To be able to identify and use some tools in Photoshop to develop a font and decoration for their crisp packet
* Demonstrate understanding or various labels and symbols used on packaging.
 | * To understand primary processing of timber materials
* To understand how woods are classified, and the properties different woods have.
* To understand how manufactured boards are made and used.
* To recognize different surface finishes applied to woods.
* To understand where plastics originate and the differences between natural and synthetic plastics and thermo/thermo-setting plastics
* To learn how to use tools and equipment safely, effectively and accurately to create the battery box.

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| * Understand what a system is
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| * Understand how electricity flows
* Understand relevant electronic symbols and a simple circuit and how to solder
 |
| * Understand how to draw in Orthographic projection
 |

 | See Spring Term 1/2 | * Understand how to analyse a task and develop a brief and a range of project/product ideas to suit a specified client and/or target market
* Understand how to communicate ideas effectively within a group
* Understand how to use the iterative design process to develop ideas to fulfil a brief.
* Understand how to develop an effective and high quality brand name and logo
* Develop modelling abilities in the production of a prototype product.
* Understand how to present final proposals to the class effectively.
 |
|  | **Main links across curriculum** |  |  |  |  |  |  |
|  | **Cross – curricular / Authentic Links** | * Art- Drawing, presentation and design
* Dance-memory skills
* English-SPag
* Science- safety, develop enquiry about the real world.
 | * Dance-describe, explain and evaluate
* English-SPag
* Maths- mean/mode/median, decimal places
 | * Art-composition
* English-SPag, using PEE
* Maths-addition and subtraction, multiplication, percentages
* Science-electricity and circuits
 | * English-SPag
* Maths-addition and subtraction, multiplication, percentages
* Science-forces
 | * Art-drawing, tone, shape, blending
* English-SPag
* Maths- measuring lines and angles, parallel and perpendicular lines
 | * Art-drawing, tone, shape, blending
* English-SPag
 |
| **Vocabulary / Literacy** | **Literacy** | **Wider Reading** | * Find out 6 R's, what sustainability means, what are infinite and finite resources
 | * Pre-reading for the next project-CAD/CAM or woods and plastics
 | * What is CAD/CAM?
* What is a prototype?
* What labelling symbols are there on packaging
 | * How do systems and circuits work?
* Properties and categories of woods
 | See Spring Term 1/2 | * Research into existing products that solve their selected problem
 |
| **Ext. Writing** | * Writing a specification
* Analyse and existing product- maze
 | * Response to feedback
 | * CAD/CAM worksheet
 | * Woods information Leaflet
 | See Spring Term 1/2 | * Written presentation or script
 |
| **Keywords** | Analysis, specification, iterative design, primary processing- fractional distillation, pulping, seasoning, smelting, plastics- thermosetting, thermo, woods-hardwood, softwood, manufactured boards, Metals-alloy, ferrous, non-ferrous, forces-compression, shear, tension torsion, | Rendering, specific tool names- marking out tools, waste line, tenon saw, sandpaper, file, try-square, mitre block.Specific material names- MDF, plywood, hardboard, oak, beech, pine.annotation | CAD/CAM, CAM machine names- laser cutter, 3D Printer, Router, Laser printer. Names of labels and symbols E.g.- tidyman, barcodePurpose of packaging-CATDIPPcircuit, finite resource, oil, manipulation, primary processes, renewable resources, systems. | Woods-hardwood, softwood, manufactured boards [including names of different types], annotation, circuit | See Spring Term 1/2 | Presentation, iterative design, prototype [Specific language linked to chosen theme] |
| **Memory & Cognition** | **Retrieval Practice** | **Start** | * Baseline test to gauge existing knowledge
 | * Walkabout bingo
 | * Recall from last project
 | * Brain dump
 | See Spring Term 1/2 | * Walkabout bingo
 |
| **On going** | * Open questions in lessons
* Low stakes quizzes
 | * Open questions in lessons
* Low stakes quizzes
 | * Low stakes quizzing
* Flash Cards to revise for QMA.
* Cops and robbers
 | * Low stakes quizzing
* Challenge/retrieval grid to revise for QMA.
 | See Spring Term 1/2 | * Low stakes quizzing
* Revision wheel
 |
| **End** | * Key piece
 | * QMA test
 | QMA test | QMA test | See Spring Term 1/2 | * End of year test
* Final presentation
 |
| **Assessment** | **Summative****Assessment** | Key piece=Product Analysis | QMA 1: Baseline Test on materials | QMA: CAD/CAM, P’shop tools and purpose of packaging.Key Piece=Labelling sheetKey Piece-Crisp Packet | QMA: sources, properties and uses of woods and plasticsKey Piece= Isometric DrawingKey Piece=Lamp | See Spring Term 1/2 | End of year testQMA/Final assessed group presentation of idea |
| **Possible misconceptions** | - Material names/classification- | -Material names and classification | - Tool names, +/- of uses of CAD/CAM, labelling symbols | -Tool names, properties and uses of materials-woods and plastics | See Spring Term 1/2 | Needs of target market and clientConstruction methods |
| **Aspiring, inspiring and Real** | **Links to real world (Inc. SMSC / PD curricula)** | * Understand material classification
* Understand what environmental sustainability means and the 6 R’s
* To be able to use different recall and revision techniques to help them revise for tests/exams.
 | * To gain some understanding of forces and structures and understand how to build a free-standing structure
* To be able to identify workshop hazards
* To be able to work safely and accurately to produce a high-quality product- keyring
* To be able to use different recall and revision techniques to help them revise for tests/exams.
 | * Demonstrate understanding of CAD/CAM
* Demonstrate understanding or various labels and symbols used on packaging.
* How products are made in industry
* To be able to use different recall and revision techniques to help them revise for tests/exams.
 | * To understand primary processing of timber materials
* To understand how woods are classified, and the properties different woods have.
* To understand where plastics originate and the differences between natural and synthetic plastics and thermo/thermo-setting plastics
* To learn how to use tools and equipment safely, effectively and accurately to create the battery box.

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| * Understand relevant electronic symbols and a simple circuit and how to solder
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* How working drawings are used
* To be able to use different recall and revision techniques to help them revise for tests/exams.
 | * To be able to use different recall and revision techniques to help them revise for tests/exams.
 | * Understand how to analyse a task and develop a brief and a range of project/product ideas to suit a specified client and/or target market
* Understand how to communicate ideas effectively within a group
* Understand how to present final proposals to the class effectively.
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| **Bridgewater High Key Stage 3 Curriculum Map** |
| Design & Technology Year 8 DT |

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|  | **Bridgewater High Key Stage 3 Curriculum Map** |
|  | Design & Technology Year 8 |
|  | Approx 39 lessons | **Chair** | **Packaging** | **Automata** |
| **Intent:6 key principles** | **Theme/Topic** | **Theme: Design drawing & modelling****Topic: Chair design** | **Theme: Packaging Design****Topic: Confectionary Package**  | **Theme: Mechanisms****Topic: Toy Automata** |
| **Clarity around knowledge** | **Key Concepts** | * Understand drawing method including isometric and orthographic and tone
* Understand scale in terms of drawing
* Recall units of measurement
* Understand what the profession of an automotive design/engineer/architect
* To be able to recognise some features of a designer/design school [Bauhaus, Phillipe Starke, Memphis Group]
* To be able to construct scale models that meet given design criteria
* Understand how to respond effectively to teacher feedback
* To be able to use different recall and revision techniques to help them revise for tests/exams.
* Anthropometrics and ergonomics
* Collaboration and groupwork
* Problem solving/risk taking
* Resilience
* To develop manufacturing skills
 | * To be able to use rendering techniques to make designs look aesthetically pleasing and realistic
* Demonstrate understanding the function of packaging and labels/ symbols used
* To create criteria for a design solution
* To gain an understanding of industrial and school printing and cutting processes
* To understand what make a successful log and be able generate an example using CAD and by hand
* Demonstrate an ability to use CAD- Photoshop to develop a font and decoration for their crisp packet
* To be able to manufacture suitable prototype packaging for confectionary
* Understand how to respond effectively to teacher feedback
* To be able to use different recall and revision techniques to help them revise for tests/exams.
* To understand the potential career opportunities of a graphic designer.
* To gain awareness of the environmental impact of packaging.
* To understand the materials used in packaging and their properties
* To understand the importance of analysing existing products
 | * Demonstrate understanding of mechanic al motion and mechanisms.
* To gain an understanding manufacturing processes and techniques to ensure quality and maintain standards.
* To develop manufacturing skills suitable to generate quality outcomes
* To develop self-confidence and decision making and resilience
* To be able to manufacture within a given tolerance
* To understand how to respond effectively to teacher feedback
* To be able to use different recall and revision techniques to help them revise for tests/exams.
* To gain awareness of the environmental impact of materials
* To develop understanding of hardwoods, softwoods and manufactured boards
* To understand the importance of analysing existing products
 |
| **Clarity around Sequencing** |  | **Main links across curriculum** | * Graphics – Packaging project – isometric drawing and tonal shading (rendering)
* Health and safety (Automata)
* Use of tools and equipment (Automata)
 | * Chair project – isometric drawing and tonal shading (rendering)
* Food – packaging and labels
* Automata - Tolerances
 | * Health and safety (Chair)
* Use of tools and equi0pment
* Tolerances (Packaging)
 |
|  | **Cross – curricular / Authentic Links** | * Art YR8 Line Tone Form Texture
* English – SPAG
* Maths – ratio and scale and mean median and mode, averages
* Drama – collaboration and exploration
* Dance – problem solving, critical thinking
 | * Art – line tone form and colour
* Maths – line, symmetry, reflection, angles, shapes
* English – SPAG
* Dance – problem solving, critical thinking
 | * Science Levers
* English SPAG
 |
| **Vocabulary / Literacy** | **Literacy** | **Wider Reading** | * Find about a given designer [Bauhaus, Phillipe Starke, Memphis Group]
 | * To find out industrial printing methods and their application
 | * To find situations where mechanisms are used and how they affect that situation
 |
| **Ext. Writing** | * Annotation to explain Design features of a Designer
 | * Analyse an existing product- Sweet Packaging
 | Analyse and compare two existing products- Automata Toys |
| **Keywords** | Isometric, Orthographic Projection, Scale, SketchAnthropometrics & ErgonomicsClient, Architect, Engineer, DesignerRendering Plan, front & side | CAD/CAM- Laser cutter, Die cutting, Lithography Corrugated, tracing, duplex, solid whiteContain, advertise, Transport, Display, Inform, Protect, PreserveAesthetics, Consumer, Cost, Environment, Safety, Function, Materials and ManufactureNames of labels and symbols E.g.- tidy man, barcodePurpose of packaging-CATDIPPSymbols | CAM, Systems, AutomationTypes of motion - linear, rotary, reciprocating, oscillatingTool/equipment- template, waste line, coping saw, sandpaper, belt sander, pillar /bench drill Resources - MDF, dowel, wheels, standard componentsToleranceTarget Market |
| **Memory & Cognition** | **Retrieval Practice** | **Start** | * Recall questions
 | * Recall questions
 | * Recall questions
 |
| **On going** | * 3 Recall Question
* Open questions in lessons
* Low stakes quizzes
* Flash cards before QMA
 | * 3 Recall Question
* Open questions in lessons
* Low stakes quizzes
* Revision wheel Before QMA
 | * 3 Recall Question
* Open questions in lessons
* Low stakes quizzes
* Before QMA
 |
| **End** | * Recall questions
 | * Recall questions
 | * Recall questions
 |
| **Assessment** | **Summative****Assessment** | Key Pieces – Isometric Designer Chair, Model &QMA  | Key Pieces – Packaging Analysis, Packaging prototype & QMA  | Key Pieces – Automata Analysis, & Automata [duck] Toy & QMA  |
| **Possible misconceptions** | - Anthropometric & Ergonomic definitions- Ability to visualise/interpret different 3D views.- Conversion of mm, cm & m units- Interpretation of angles [orthographic projection]-Scale/fraction | - Conversion and measurement of mm & cm- Interpretation of angles- Ability to visualise/interpret different 3D views [manufacture of net]. | - Tool names,- the term perpendicular [in terms of keeping the coping saw in that position whilst cutting to avoid breaking blade and getting an accurate cut]- Conversion and measurement of mm & cm |
|  |  |  |  |  |
| **Aspiring, inspiring and Real** | **Links to real world (Inc. SMSC / PD curricula)** | * Understand what the profession of an automotive design/engineer/architect
* Problem solving, collaboration and resilience
* To develop manufacturing skills
* To be able to recognise some features of a designer/design school [Bauhaus, Phillipe Starke, Memphis Group]
* Practical work/Health and saftey
 | * To gain awareness of the environmental impact of packaging
* To gain awareness of the environmental impact of packaging
* To understand the potential career opportunities of a graphic designer.
* CAD.CAM
* Demonstrate understanding the function of packaging and labels/ symbols used
* Demonstrate understanding the function of packaging and labels/ symbols used
* To understand the importance of analysing existing products
* To be able to manufacture suitable prototype packaging for confectionary
* Laser cutter – H&S
 | * To gain awareness of the environmental impact of packaging
* Health and Safety /practical
* Practical work
* mechanic al motion and mechanisms.
* To understand the importance of analysing existing products
* To gain awareness of the environmental impact of packaging

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| **Bridgewater High Key Stage 3 Curriculum Map** |
| Design & Technology Year 9 Graphics |

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|  | Approx 39 lessons | **Autumn/Spring Term 1** | **Autumn/Spring Term 2** | **Autumn/Spring Term 1** | **Autumn/Spring Term 2** | **Summer Term 1** | **Summer Term 2** |
| **Intent:6 key principles** | **Theme/Topic** | **Theme: Charity Box****Topic: Introduction papers and boards theory, specifications and design ideas** | **Theme: Charity Box****Topic: Introduction to using ‘Photoshop’ to create logos and packaging/charity box** | **Theme: CAD/CAM and Communication of ideas****Topic: CAD/CAM and Design strategies**  | **Theme: CAD/CAM and Communication of ideas using a range of drawing techniques****Topic: Communication of ideas-Drawing techniques and Sustainable design** | **Theme: Designing and making for a specific target market****Topic: Paper-toy Buddy** | **Theme: Working to a set Brief-Dragons Den Style Presentation****Topic Choices:** ‘A Home for Everyone’, ‘Waste Free’ and ‘Helping people with a Disability’ |
| **Clarity around knowledge** | **Key Concepts** | * To understand primary processing of paper/board materials
* To understand the properties of different papers and boards
* To understand printing and cutting methods used in school and industry
* To understand how and why product analysis is useful
* Understand what a specification is and how to write one for their charity box
* To communicate their ideas through high quality logo and package design [isometric drawing]
* To be able to use different recall and revision techniques to help them revise for tests/exams.
* Understand how to respond effectively to teacher feedback
 | * To be able to use rendering techniques to make designs look aesthetically pleasing and realistic.
* To be able to work safely and accurately to produce a high-quality final product using CAD-2D Design to draw accurate nets and ‘Photoshop’ to decorate their net/charity box.
* Demonstrate understanding or various labels and symbols used on packaging.
* Understand how to evaluate their work effectively against the specification they have written.
* Understand how to respond effectively to teacher feedback
 | * Demonstrate understanding of CAD/CAM and its uses in school and industry [including programmes and machinery]
* **Develop understanding of CAD program ‘Sketch-Up’ and be able to identify and use basic tools to draw and render a house**
* Understand a range of design strategies- systems, user-centred and Iterative
* Understand how to respond to feedback
* To be able to use different recall and revision techniques to help them revise for tests/exams.
 | * To understand how to use a range of communication methods including isometric, one-point perspective, two-point perspective, oblique, orthographic and exploded views/working drawings.
* To understand what sustainable design is and some of the key features of an eco-house.
* To understand how to produce a high quality final rendered design of a modern eco building in two-point perspective
* To understand how to draw a room in accurate one-point perspective.
* Understand how to respond to feedback
* To be able to use different recall and revision techniques to help them revise for tests/exams.
 | * Understand what jobs graphic designers do \* Understand how to create a 'User Centred' design
* To understand how to create a high quality design for a paper-toy character aimed at a specific target market
* To understand how to use a range of more complex net shapes to develop a a prototype paper-toy character for a specific target market
* \*Understand how to draw your character in 3rd Angle Orthographic Projection.
 | * Understand how to analyse a task and develop a brief and a range of project/product ideas to suit a specified client and/or target market
* Understand how to communicate ideas effectively within a group
* Understand how to use the iterative design process to develop ideas to fulfil a brief.
* Understand how to develop an effective and high quality brand name and logo
* Develop modelling abilities in the production of a prototype product.
* Understand how to present final proposals to the class effectively.
 |
| **Clarity around Sequencing** |  | **Main links across curriculum** | * Product – product analysis, specification
 |  |  | * Product -presentation drawing, CAD drawing, orthographic drawing
 |  |  |
|  | **Cross – curricular / Authentic Links** | * English – Key word terminology
 | * English – Key word terminology
* Maths –Autumn term1 Angles, Autumn term 2 – Construct 3D shapes from nets
 | * English – Key word terminology
 | * English – Key word terminology
* Art – Drawing techniques one/two point perspective buildings
 | English – Key word terminology | * English – Key word terminology
 |
| **Vocabulary / Literacy** | **Literacy** | **Wider Reading** | * Find out about existing charities
 |  | * What is CAD/CAM?
* What is eco-design?
 | * Architects and eco-design research
 | Find examples of complex nets used in making paper-toy characters | * Research into existing products that solve their selected problem
 |
| **Ext. Writing** | * Writing a specification
* Analyse an existing product
 | * Response to feedback
 | * Sketch-up worksheet
* Yr9 exam extended question
 | * Architect research
 | N/A | * Written presentation or script
 |
| **Keywords** | Analysis, specification, primary processing- pulping, Printing-lithography, gravure, flexography, screen printing, Cutting-laser cutter, die cutter, prototypeannotation | Rendering, specific tool names in ‘2D Design and Photoshop annotation | Design strategies-Systems, user-centred, iterative.CAD/CAM, CAM machine names- laser cutter, 3D Printer, Router, Laser printer. CAD package- Photoshop, 2D design, Rhino, AutoCAD | * annotation, isometric, one-point perspective, two-point perspective, oblique, orthographic and exploded views/working drawings.
* Specific eco-features Wind turbine
* · Solar panels
* · Greenhouse
* · Reed bed
* · Compost heap
* · Ground source heat pump.
* · Vegetable garden
* · Roof insulation
* · Triple glazing
* · Recycling bins
* Grocery delivery
* Air source heat pump
* Ultra efficient insulation
* · Energy efficient appliances
* · Underfloor heating
* · House made from sustainable materials from a local source. E.g. wooden flooring
* · Compost toilet
* · Use electric vehicles or bikes
* · Multi-fuel stove burning local materials
* · Rain water collection and re-use of grey water [bath/washing-up water]
* · Heat recycling
* · Getting shopping delivered
* Draft excluder
 | Presentation, iterative design, prototype , net, tabs, development, rendering | Presentation, iterative design, prototype [Specific language linked to chosen theme] |
| **Memory & Cognition** | **Retrieval Practice** | **Start** | * Recall 3, types of papers and boards
 | * Recap on ‘Photoshop’/’2D Design tools
 | * Recall from last project
 | * Types of drawing quiz
 | * Guess the net activity
 | * What is a design brief
 |
| **On going** | * Recall 3 every lesson
* Open questions in lessons
* Low stakes quizzes
* Cops and Robbers before QMA
 | * Recall 3 every lesson
* Open questions in lessons
* Low stakes quizzes
 | * Recall 3 every lesson
* Open questions in lessons
* Low stakes quizzes
* Walkabout Bingo before QMA
 | * Recall 3 every lesson
* Open questions in lessons
* Low stakes quizzes
 | * Recall 3 every lesson
 | * Recall 3 every lesson
* Low stakes quizzing
 |
| **End** | * Key piece/QMA/YR9 exam
 | * Key piece- final charity box
 | * Key piece/QMA/YR9 exam
 | * Key piece-2 pt perspective eco house drawing
 | Making net shapes challenge | * End of year test
* Final presentation
 |
| **Assessment** | **Summative****Assessment** | Yr9 Exam/QMA-theory of papers and boardsKey piece-Design ideas | Key piece-Final Charity box | QMA: CAD/CAM, Types of Drawing | Key piece-2 pt perspective eco house drawing | Key Piece-Final piece -paper-toy character QMA-Yr9 exam | Key piece-Final assessed group presentation of idea |
|  | **Possible misconceptions** | - Material names/classification-printing/cutting methods in school and industry, isometric drawing techniques | -Material names and classification, uses of tools in Photoshop/2D Design, net shapes, isometric drawing | - Tool names, +/- of uses of CAD/CAM, labelling symbols | -isometric, one and 2 point perspective drawing techniques | How to draw more complex net shapes | Needs of target market and clientConstruction methods |
| **Aspiring, inspiring and Real** | **Links to real world (Inc. SMSC / PD curricula)** | Understanding industrial process of printingRecallKey piece/QMA/YR9 exam* Understand how to respond effectively to teacher feedback
 | -Problem solving, -working with a brief and understanding the needs of target market-To be able to work safely and accurately to produce a high-quality final product using CAD-2D-Demonstrate understanding or various labels and symbols used on packaging.-RecallKey Piece-Final piece -paper-toy character QMA-Yr9 exam | -How design strategies apply to different companies/brands-Demonstrate understanding of CAD/CAM and its uses in school and industry-Recall-Key piece/QMA/YR9 exam**-Develop understanding of CAD program ‘Sketch-Up’ and be able to identify and use basic tools to draw and render a house** | -Eco/sustainable design-Recall-To understand what sustainable design is and some of the key features of an eco-house.Key Piece-Final piece -paper-toy character QMA-Yr9 exam | RecallTo understand how to create a high quality design for a paper-toy character aimed at a specific target marketKey Piece-Final piece -paper-toy character QMA-Yr9 examPracticalPractical | -Team work. Problem solving, working with a brief and understanding the needs of target market-End of year test-Final presentation-RecallKey Piece-Final piece -paper-toy character QMA-Yr9 exam |

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| **Bridgewater High Key Stage 3 Curriculum Map** |
| Product Design Year 9 |

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|  | 39 lessons | **Autumn Term 1 & 2****15 lessons** | **Autumn Term 1 & 2****3 lessons** | **Spring Term 1 & 2****12 lessons** | **Summer Term 1&2** |
| **Intent:6 key principles** | **Theme/Topic** | **Theme: Hand held torch****Topic:** Using a range of materials, modelling & finishing techniques to produce a high quality torch | **Theme: Biomimicry, smart & modern materials****Topic:** Applying knowledge of biomimicry, smart  and modern materials to **create** a **new** product that uses **one or more** as an **inspiration**for the design.  | **Theme: Pizza cutter****Topic:** Building on previous projects pupils develop understanding of materials, both primary sources and categories to design and make a functioning pizza cutter. | **Theme: Working to a set Brief-Dragons Den Style Presentation****Topic Choices:** ‘A Home for Everyone’, ‘Waste Free’ and ‘Helping people with a Disability’ |
| **Clarity around knowledge** | **Key Concepts****(objectives)** | **Theory concepts:** Overview/Brief, ergonomics & anthropometrics, product analysis, manufacturing processes, product specification, Ideas, development, **Practical Application:** modelling & CAD/CAM, 2D design, laser cutterUsing a range of materials and processes to produce a high quality torch. Based on the new format GCSE, therefore preparing pupils for Y10 &11 | **Theory concepts:**Understanding Biomimicry, smart materials, modern materials and there application, **Practical Application:** identifying design problems and producing a detailed solution. | **Theory concepts:**Embedding understanding of overview/brief, form v’s function, iterative design, product analysis, aesthetics, client user profile, specification, mood board & ideas, designers & their work. **Practical Application:** Sketch modelling using clay, card, Styrofoam, presentation drawing, CAD drawing, orthographic drawing, use of a range of materials/manufacturing methods to produce a high quality pizza cutter. | * Understand how to analyse a task and develop a brief and a range of project/product ideas to suit a specified client and/or target market
* Understand how to communicate ideas effectively within a group
* Understand how to use the iterative design process to develop ideas to fulfil a brief.
* Understand how to develop an effective and high quality brand name and logo
* Develop modelling abilities in the production of a prototype product.

 Understand how to present final proposals to the class effectively. |
| **Clarity around Sequencing** | **Main links across curriculum** | Graphics – Autumn term 1 & 2 communicate their ideas through high quality logo and package design [isometric drawing] Product analysis, specification |  | Graphics summer term 1& 2 modelling to produce a prototype |  |
| **Cross – curricular / Authentic Links** | English – Key word terminology | English – Key word terminology | English – Key word terminology | * English – Key word terminology
 |
| **Vocabulary / Literacy** | **Literacy** | Writing in sentences, analysing products & information, use of grammar, spellings.**Extended writing:**Lesson 2,4,12 | Reading key words, writing facts, communicating/explanation of ideas  | Use of command words compare & contrast, writing in sentences, writing in bullet points**Extended writing:**Lesson 1 | * Research into existing products that solve their selected problem
* Written presentation or script Presentation, iterative design, prototype
* [Specific language linked to chosen theme]
 |
| **Memory & Cognition** | **Retrieval Practice** | **Start** | Mind map | Extracting information from video | Highlighting key information, Access FM | * What is a design brief
 |
| **On going** | Access FM, card sort (materials), self- assessment, selecting relevant information to aid design & manufacture, peer assessment & self-assessment | Retrieval of relevant information for design task | Mind map, selecting relevant information to aid design & manufacture, peer assessment & self-assessment | * Recall 3 every lesson
* Low stakes quizzing
 |
| **End** | QMA/Evaluation of final product |  | QMA/Evaluation of final product | * End of year test
* Final presentation
 |
| **Assessment** | **Summative****Assessment** | QMA – Anthropometrics, ergonomics, tools and machineryKey Piece= Development of Ideas Key Piece=Making assessment of torch | QMA-Smart Materials/BiomimicryKey Piece=Presentation of new product idea | QMA – Materials and toolsKey Piece= Development of IdeasKey Piece= pizza cutter | Key Piece=Final assessed group presentation of idea |
|  | **Possible Misconceptions** | Confusion content in Overview & brief | lack of understanding of the terms ‘smart & modern’ materials and the difference between each | Needs of target market and clientConstruction methods | Needs of target market and clientConstruction methods |
| **Aspiring, inspiring and Real** | **Links to real world (Inc. SMSC / PD curricula)** | * To understand printing and cutting methods used in school and industry
* To be able to use different recall and revision techniques to help them revise for tests/exams.
* Understand how to respond effectively to teacher feedback
* ergonomics & anthropometrics, product analysis, manufacturing processes, product specification, Ideas
* Practical work
 | **one or more** as an **inspiration**for the design. **Theory concepts:**Understanding Biomimicry, smart materials, modern materials and there application, **Practical Application:** identifying design problems and producing a detailed solution.Demonstrate understanding or various labels and symbols used on packaging.Demonstrate understanding or various labels and symbols used on packaging.Practical work | How anthropometric data is used to ensure ergonomic products are designed-Understanding Biomimicry, smart materials, modern materials and there applicationPractical work-Recall 3 every lesson-Open questions in lessons-Low stakes quizzesHow we can be more responsible [consider sustainability] with the products we choose to buyModelling work/practical | -Understand how to analyse a task and develop a brief and a range of project/product ideas to suit a specified client and/or target marketUnderstand how to communicate ideas effectively within a group Practical workModelling work/practicalKey Piece-Final assessed group presentation |

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| **Bridgewater High Key Stage 4 Curriculum Map** |
| Design & Technology Year 10 Graphics |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Approx 39 lessons | **Autumn Term 1** | **Autumn Term 1** | **Spring Term 1** | **Spring Term 2** | **Summer Term 1** | **Summer Term 2** |
| **Intent:6 key principles** | **Theme/Topic** | **Practical Theme/topics:** Intro to Graphics, Book Cover and Point of Sale Display**Theory Topics: *Specialist Technical Principles***-Papers and boards | **Practical Theme/topics:** Intro to Graphics, Book Cover and Point of Sale Display**Theory Topics:** ***Specialist Technical Principles***-papers and boards ***Designing Principles***- | **Practical Theme/topics:** Mini NEA – Healthy Lifestyles**Theory Topics*****Designing and Making Principles***: | **Practical Theme/topics:** Mini NEA – Healthy Lifestyles**Theory Topics*****Designing and Making Principles***:  | **Practical Theme/topics:** Mini NEA – Healthy Lifestyles, Mini Make**Theory Topics:***Core Technical Principles* | **Practical Theme: NEA Theory Topics***Core Technical Principles* |
| **Clarity around knowledge** | **Key Concepts** | **Practical Theme/topics** * Understand the project context and design brief
* Understand how to analyse a book cover effectively
* Effectively analyse an existing book cover to help develop your own ideas.
* Understand the importance of eye-catching logos/fonts
* Understand how to create a relevant and high-quality title font for a book
* \*Understand what makes a good logo/title
* \*Understand how to create a high-quality title for your book using basic ‘Photoshop’ skills
* Understand how to use the basic tools in ‘Photoshop’ to create an ‘Eye in Space’
* Understand how to create your own relevant character using ‘Photoshop’
* \*Consider the style of illustration you would like to use on your book cover
* \*Understand how to create an effective design for you character
* To be able to use different recall and revision techniques to help them revise for tests/exams.
* Understand how to respond effectively to teacher feedback

**Theory Topics to understand:*** Sources and properties of materials-papers and boards
* Stock forms, weights and sizes of papers and boards
* Standard components- bindings, joining and seals
* Shaping and forming with different tools
* Printing processes and special finishes
* Quality control-printing marks and tolerances
* To be able to use different recall and revision techniques to help them revise for tests/exams.
 | **Practical Theme/topics** * Understand how to produce quick, sketchy ideas for a cover layout
* Understand how to draw an accurate book cover net using 2D Design
* Understand the marking criteria for your work.
* Understand how to show development of your work.
* Understand how to produce a range of eye-catching ideas for a POS to help promote your chosen book.
* Understand how develop a basic net shape to fit the genre of you chosen book.
* Understand how to use 2D Design/the laser cutter to cut out your POS net
* Understand how to use basic ‘Photoshop’ skills to decorate your POS
* Understand how to apply graphics to the POS neatly and accurately
* To be able to work safely and accurately to produce a high-quality final product using CAD-2D Design to draw accurate nets and ‘Photoshop’ to decorate their net/charity box.
* Demonstrate understanding or various labels and symbols used on packaging.
* Understand how to evaluate their work effectively against the specification they have written.
* Understand how to respond effectively to teacher feedback

**Theory Topics to understand:*** Design strategies
* Exploring and developing design ideas- including drawing techniques [communicating ideas in isometric projection, one point and two-point perspective, orthographic projection, exploded views and systems/schematic diagrams]
 | **Practical Theme/topics** * Understand how to analyse a task, write your own design brief and identify a target market
* Understand how to write a justified specification
* Understand how to analyse existing products effectively
* Understand how looking at the work of others can positively influence your own work.
* Understand how to develop a high-quality logo using a range of media.
* Understand how to respond to feedback

**Theory Topics to understand:*** Design briefs, Investigation and research- including ergonomics
* The work of others- designers and companies
* Manufacturing Specifications
* To be able to use different recall and revision techniques to help them revise for tests/exams.
 | **Practical Theme/topics** * To understand how to produce a range of high-quality design ideas in isometric projection
* To understand how to use [iterative design strategy] modelling by hand or using CAD to develop their design effectively.
* To show understanding of relevant materials and manufacturing techniques to use for a prototype package.
* To understand how to create a final high-quality prototype using CAD/CAM
* Understand how to respond to feedback

**Theory Topics to understand:*** Developing prototypes and modelling -virtual modelling/modelling in card, foam, clay or other suitable materials]
* Material management-Marking out and using materials efficiently
* Health and safety-working safely
* To be able to use different recall and revision techniques to help them revise for tests/exams.
 | **Practical Theme/topics** * To understand how to create a final high-quality prototype using CAD/CAM
* To understand how to evaluate their prototype against the original specification with 3rd party feedback

**Theory Topics to understand:*** Technology in Manufacture
* CAD/CAM
* Product

Sustainability* Products in society
* Social issues
* Powering Systems
* Modern, smart and composite materials and technical textiles.
* Electronic systems-circuits, inputs, processes and outputs.
* Mechanisms, gears, cams & followers, pulleys& belts, levers & Linkages
 | **Practical Theme/topics** -NEA* Understand how to analyse a task and develop a brief and a range of project/product ideas to suit a specified client and/or target market
* Understand how to use the iterative design process to develop ideas to fulfil a brief.
* Understand how to analyse existing products

**Theory Topics to understand:*** Material Properties, Papers & boards, Natural timbers, Manufactured boards, Metals & alloys, Polymers[plastics], Textiles.
* Sources of materials/Production of materials- papers & boards, woods, metals, plastics, textiles.
* Production Aids-jigs, patterns and templates
 |
| **Clarity around Sequencing** |  | **Main links across curriculum** | * Working to a set brief for practical work-Food/Product Design
* Theory topics in Product Design
* To be able to use different recall and revision techniques to help them revise for tests/exams.
 | * Design and theory skill-product design
* To be able to use different recall and revision techniques to help them revise for tests/exams.
 | * Design and theory skill-product design
* To be able to use different recall and revision techniques to help them revise for tests/exams.
 | * Design and theory skill-product design
* To be able to use different recall and revision techniques to help them revise for tests/exams.
 | * Design and theory skill-product design
* To be able to use different recall and revision techniques to help them revise for tests/exams.
 | * To be able to use different recall and revision techniques to help them revise for tests/exams.
 |
|  | **Cross – curricular / Authentic Links** | * Art and Textiles-line, tone, shape, presentation, annotation, contextual study.
* Chemistry-metals and polymers
* Drama- evaluation of ideas
* English- use of SPaG
* Maths-Trig
 | * Art and Textiles-line, tone, shape, presentation, annotation, developing ideas, final design, contextual study.
* Drama- evaluation of ideas
* English- use of SPaG
* PE-levers
* Physics-energy generation and storage
 | * Art and Textiles-line, tone, shape, presentation, annotation, contextual study.
* Chemistry-extraction of metals
* Drama- evaluation of ideas
* English- use of SPaG
* Maths- geometry
 | * Art and Textiles-line, tone, shape, presentation, annotation, developing ideas, final design, contextual study.
* Chemistry-Using electrolysis to extract metals.
* Drama- evaluation of ideas
* English- use of SPaG
* Maths- ratios and fractions, percentages
* Physics-electricity-cicuits
 | * Art and Textiles-line, tone, shape, presentation, annotation, contextual study.
* Chemistry-energy-cells
* English- use of SPaG
* Maths-collecting, representing and interpreting data
* Physics-electricity-cicuits
 | * Art and Textiles-line, tone, shape, presentation, annotation, developing ideas, final design, contextual study.
* Biology- waste management, deforestation, global warming
* English- use of SPaG
* Maths-non-calculator methods
* PE-Analysis and evaluations
* Physics-Forces.
 |
| **Vocabulary / Literacy** | **Literacy** | **Wider Reading** | * Types of printing in industry
* Types of illustration related to their chosen genre of book/film
 | * How to draw in isometric, orthographic, one- and 2-point perspective and exploded views
 | * Key designers and companies
 | * Health and safety rules
* Materials and manufacturing techniques in school and industry
 | * Mechanisms
* Smart and modern materials
* Sustainability
 | * Sources and production of materials
* Key designers linked to NEA theme
 |
| **Ext. Writing** | * Product analysis
* Analyse an existing product
 | * Cover development
* evaluation
* Extended exam question
 | * Product Analysis
* Specification
* Extended exam question
 | * Development of ideas
* Materials and Manufacturing techniques
 | * Evaluation against specification
* Extended exam questions
 | * Design Brief
* Analysis of context/task
* Product Analysis
* Specification
 |
| **Keywords** | * Analysis, specification, primary processing- pulping, Printing-lithography, gravure, flexography, screen printing, Cutting-laser cutter, die cutter, prototype
* annotation
* CAD/CAM, CAM machine names- laser cutter, 3D Printer, Router, Laser printer. CAD package- Photoshop, 2D design, Rhino, AutoCAD
 | * Rendering, specific tool names in ‘2D Design and Photoshop
* Design strategies-Systems, user-centred, iterative.
* annotation, isometric, one-point perspective, two-point perspective, oblique, orthographic and exploded views/working drawings.
 | * Ergonomics /anthropometrics
* Analysis
* Specification
* Investigation
 | * Nesting
* Efficiency
* Modelling
 | * Presentation, iterative design, prototype, net, tabs, development, rendering
 | * Presentation, iterative design, prototype
 |
| **Memory & Cognition** | **Retrieval Practice** | **Start** | * Recall 3, types of papers and boards and manufacturing methods
 | * Recall 3
* Printing and special effects quiz
* Types of drawing quiz
 | * Recall 3
* Recall from last project- revision roulette
* What is a design brief?
 | * Recall 3
* What do you know about…..?
* Walkabout bingo
 | * Recall 3
* What do you know about…..?
* Cops and robbers
 | * Recall 3
* What is a design brief?
* Retrieval roulette
* Revision wheel
 |
| **On going** | * Recall 3 every lesson
* Open questions in lessons
* Low stakes quizzes
 | * Recall 3 every lesson
* Open questions in lessons
* Low stakes quizzes
 | * Recall 3 every lesson
* Open questions in lessons
* Low stakes quizzes
 | * Recall 3 every lesson
* Open questions in lessons
* Low stakes quizzes
 | * Recall 3 every lesson
* Open questions in lesson
* Low stakes quizzes
 | * Recall 3 every lesson
* Open questions in lessons
* Low stakes quizzes
 |
| **End** | * QMA- papers and boards-revision wheel
 | * Yr10 exams
* Recall 3
* Flash cards
* Revision roulette
 | * Recall 3
* Revision roulette
 | * Recall 3
* Revision roulette
 | * Recall 3
* Revision roulette
 | * Recall 3
* Revision roulette
 |
| **Assessment** | **Summative****Assessment** | QMA-theory of papers and boardsKey piece-Logo ideas | Yr10 Exam Key piece-Final Book Cover/POS Display | QMA: Drawing techniquesKey piece-Shape Ideas | Key piece-Modelling Development | QMA: Core PrinciplesKey piece-Final Make | Yr10 Exam Ongoing as completing NEA |
|  | **Possible misconceptions** | - Material names/classification-printing/cutting methods in school and industry | -Uses of tools in Photoshop/2D Design, net shapes,-Types of drawing | -Ergonomics /anthropometrics-Types of drawing-specification points | -Creating/Modelling challenging net shapes -mathematical calculation of materials and their costs | - calculating gear and belt and pully ratios cams -Powering systems  | -Needs of target market and client-Construction methods |
| **Aspiring, inspiring and Real** | **Links to real world (Inc. SMSC / PD curricula)** | * Understand the project context and design brief
* \*Understand what makes a good logo/title
* \*Understand how to create a high-quality title for your book using basic ‘Photoshop’ skills
* To be able to use different recall and revision techniques to help them revise for tests/exams.
 | * Understand how to produce a range of eye-catching ideas for a POS to help promote your chosen book.
* Understand how to use basic ‘Photoshop’ skills to decorate your POS
* To be able to work safely and accurately to produce a high-quality final product using CAD-2D Design to draw accurate nets and ‘Photoshop’ to decorate their net/charity box.
* Demonstrate understanding or various labels and symbols used on packaging.
* Design strategies
 | * Understand how to analyse a task, write your own design brief and identify a target market
* Understand how looking at the work of others can positively influence your own work.
* Design briefs, Investigation and research- including ergonomics
* The work of others- designers and companies
* Manufacturing Specifications
* To be able to use different recall and revision techniques to help them revise for tests/exams.
 | * To understand how to use [iterative design strategy] modelling by hand or using CAD to develop their design effectively.
* Material management-Marking out and using materials efficiently
* Health and safety-working safely
* To be able to use different recall and revision techniques to help them revise for tests/exams.
 | * To understand how to create a final high-quality prototype using CAD/CAM
* To understand how to evaluate their prototype against the original specification with 3rd party feedback
* Technology in Manufacture
* CAD/CAM
* Product

Sustainability* Products in society
* Social issues
* Powering Systems
* Modern, smart and composite materials and technical textiles.
* Electronic systems-circuits, inputs, processes and outputs.
 | **Practical Theme/topics** -NEA* Understand how to analyse a task and develop a brief and a range of project/product ideas to suit a specified client and/or target market
* Understand how to use the iterative design process to develop ideas to fulfil a brief.
* Material Properties, Papers & boards, Natural timbers, Manufactured boards, Metals & alloys, Polymers[plastics], Textiles.
* Sources of materials/Production of materials- papers & boards, woods, metals, plastics, textiles.

Production Aids-jigs, patterns and templates |

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| **Bridgewater High Key Stage 4 Curriculum Map** |
| Product Design Year 10 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | **Autumn Term 1 & 2**  |  | **Spring Term**  | **Summer Term**  |
| **Intent:6 key principles** | **Theme/Topic** | **Theme: Angle-poise lamp****Topic:** A practical project covering key workshop skills necessary to succeed in the NEA. Each practical aspect is also closely linked the theory topics required by the NEA |  **Theme: Solvay/CIA Awards Project** **Topic:** Following a structure similar to the NEA and working with real clients pupils are to design, develop and manufacture an Award to be presented at the Chemical Industries awards Evening  | **Theory Covered every Monday**  | Mini NEA then real NEA PlayStation clay model and development working from a step by step specification Specification Development  | Theory covered every Monday  |
| **Clarity around knowledge** | **Key Concepts** | **Practical skills covered** * Marking our wood/metal/plastic
* Construction of halving joints
* Mortise and tenon
* Pillar drill / rebate
* Metal Guillotine and bender
* Vacuum forming
* Laser cutting
* Use of 2d design
* Use of adhesives
* Finishing wood (waxing/varnishing)
* Preparation for/ and soldering

**Theory Concepts covered*** Woods – primary processing, timbers and boards, hand tools and machines, shaping
* Plastics – primary process, identification of and forming and moulding
* Metals – primary processing and extraction, Types of / shaping/forming
* Stock forms and standard components
* CAD/CAM
* Adhesives
* Finishing techniques / modifying materials
* Electronic components / circuits
 | **Folder work linked to NEA sections*** Annotated / traced mood board (SEC A/B)
* Initial ideas (SECTION C)
* Development (drawn) (SECTION D)
* Development (model) (SECTION D)
* Client Profile (done after met Solvay and CIA reps) incorporate basic specification (SECTION A/B)
* Materials sheet (SECTION D)
* Cutting list (SECTION D)
* Sketch up model of the award – CAD/CAM (D)
* Production plan / POM ( D)
* Isometric and orthographic drawing (D)
* Evaluation (F)

Practical work * Sketch modelling (D)
* 2d design drawing for model (D)
* Laser cut model one (corrugated) (D)
* Develop model on CAD (D)
* Laser cut model 2 – actual size with diff cards to rep diff materials
* Show to Solvay and then make any modifications
* Manufacture award in workshop (E)

Hand tools/machines/joints/adhesives/finishing/production of a high quality piece | **Theory work Covered this term** * Textiles
* Textiles and Manufactured boards
* Mechanical systems
* Developments in new materials

**Use of Daydream education Digital Pocket poster online resource for the next sections*** New and emerging technologies (p2-10) in your blue books
* Energy Generation and Storage (powering systems p 12,13 in blue books)
* Section 3 in book – More about materials
* Selecting mats
* Forces and stresses
* SOP
* QC
* Production Aids
 |  | Section 8 of the book needs to be covered this term.* Work of Designers
* Understanding user needs
* Product Analysis
* Design Strats
* Drawing techniques
* Health and Safety
* Efficient use of mats
 |
| **Clarity around Sequencing** | **Main links across curriculum** | * Working to a set brief for practical work-Food/Product Design
* Theory topics in Product Design
* To be able to use different recall and revision techniques to help them revise for tests/exams.
 | * Design and theory skill-product design

To be able to use different recall and revision techniques to help them revise for tests/exams.  | * Design and theory skill-product design
* To be able to use different recall and revision techniques to help them revise for tests/exams.
 | * Design and theory skill-product design
* To be able to use different recall and revision techniques to help them revise for tests/exams.
 | * Design and theory skill-product design
* To be able to use different recall and revision techniques to help them revise for tests/exams.
 | * To be able to use different recall and revision techniques to help them revise for tests/exams.
 |
| **Cross – curricular / Authentic Links** | * Art and Textiles-line, tone, shape, presentation, annotation, contextual study.
* Chemistry-metals and polymers
* Drama- evaluation of ideas
* English- use of SPaG
* Maths-Trig
 | * Art and Textiles-line, tone, shape, presentation, annotation, developing ideas, final design, contextual study.
* Drama- evaluation of ideas
* English- use of SPaG
* PE-levers

Physics-energy generation and storage | * Art and Textiles-line, tone, shape, presentation, annotation, contextual study.
* Chemistry-extraction of metals
* Drama- evaluation of ideas
* English- use of SPaG

Maths- geometry | * Art and Textiles-line, tone, shape, presentation, annotation, developing ideas, final design, contextual study.
* Chemistry-Using electrolysis to extract metals.
* Drama- evaluation of ideas
* English- use of SPaG
* Maths- ratios and fractions, percentages

Physics-electricity-cicuits | * Art and Textiles-line, tone, shape, presentation, annotation, contextual study.
* Chemistry-energy-cells
* English- use of SPaG
* Maths-collecting, representing and interpreting data

Physics-electricity-cicuits | * Art and Textiles-line, tone, shape, presentation, annotation, developing ideas, final design, contextual study.
* Biology- waste management, deforestation, global warming
* English- use of SPaG
* Maths-non-calculator methods
* PE-Analysis and evaluations

Physics-Forces. |
| **Vocabulary / Literacy** | **Wider reading** | Extracting, Highlighting and summarising theory content |  | Extracting, Highlighting and summarising theory content |  |  |
| **Ext. Writing** | Exam style questions up to 8 marksDescribing properties of materialsAnalysing why materials have been chosen or the job  | Specification – full sentences with justificationProduction plan – instructional writingEvaluation – extended writing with analysis justification and conclusion  | Exam style questions up to 8 marks |  |  |
| **Keywords** | Specific technical jargon (Descriptive words) linked to properties of materials | Specific technical jargon (Descriptive words) linked to properties of materials | Specific technical jargon (Descriptive words) linked to properties of materials |  |  |
| **Memory and cognition****Memory & Cognition** | **Retrieval Practice** | **Start** | THEORY **Start of project** **Materials memory from KS3** **Ongoing** **Retrieval roulette** at the beginning of each theory lesson on previous lesson(4 questions)**Roll the dice specifically for qma**Lesson before QMA**End of lamp project**Roll the dice to cover all theory in sections 2 and 5 of the blue bookPRACTICAL STARTpupil led demos for practical Ongoing Retrieval roulette – 4 questions from previous weeks theory  | PRACTICAL Questioning, SMHW quizzesTHEORY END - QMA – roll the dice lesson before QMAPRACTICAL END Lamp – showing understanding of manufacturing methods and safe and accurate use of tools and equipment | PRACTICAL StartPupil demo from last lessonOngoingQuestioning recalling prior knowledgeSMHW quizzes relevant to lessonEndKey pieces pf design or practical workEg client profile page, development page and final award  | THEORY STARTRetrieval roulette – 4 questions from previous weeks theoryONGOINGQuestioning END OF EACH THEORY Pocket poster tests end of each section QMA on theory work of this term  |  |  |
| **On going** |
| **End** |
| **Assessment** | **Summative****Assessment** | Key pieces 1. Materials sheet 2. Final Make  3. QMA – Primary Processing, materials types4. Exploded drawing | Key pieces 1. Development sheet 2. Client Profile  3. Final Make  4. SketchUp model?? | QMA – Electrical and Mechanical Systems |  | QMA – Core Technical PrinciplesYr10 Exams |
| **Possible Misconceptions** | Theory Materials sheet – pupils not linking properties to their product..PracticalHalving joints made on the wrong sideBracket holes too far away from the mortise so arm is not held properlyThe importance of careful marking out  | Forgetting extra size for tenon on cutting list.The length of time taken to finish acrylicSpace for the plaques |  |  |  |
| **Aspiring, inspiring and Real** | **Links to real world (Inc. SMSC / PD curricula)** | **Practical skills**  | * Client Profile (done after met Solvay and CIA reps) incorporate basic specification (SECTION A/B)
* Cutting list (SECTION D)
* Sketch up model of the award – CAD/CAM (D)
* Evaluation (F)

tools/machines/joints/adhesives/finishing/production of a high-quality piece | * Developments in new materials
* New and emerging technologies
* Energy Generation and Storage
 |  | * Work of Designers
* Understanding user needs
* Health and Safety
* Efficient use of materials
 |

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| **Bridgewater High Key Stage 4 Curriculum Map** |
| Design & Technology Year 11 DT |

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| --- | --- | --- | --- | --- | --- | --- |
|  | Approx 39 lessons | **Autumn Term 1** | **Autumn Term 1** | **Spring Term 1** | **Spring Term 2** | **Summer Term 1** |
| **Intent:6 key principles** | **Theme/Topic** | **Practical Theme/topics:**Intro to NEA-sections A,B,C**Theory Topics to understand and consider-***Core Technical Principles, Specialist Technical Principles, Designing and Making Principles*  | **Practical Theme/topics:** Section C,D**Theory Topics to understand and consider-***Core Technical Principles, Specialist Technical Principles, Designing and Making Principles*  | **Practical Theme/topics:** Sections D,E,F**Theory Topics to understand and consider-***Core Technical Principles, Specialist Technical Principles, Designing and Making Principles*  | **Practical Theme/topics:** Sections D,E,F**Theory Topics***Core Technical Principles, Specialist Technical Principles, Designing and Making Principles*  | **Theory Topics:***Core Technical Principles, Specialist Technical Principles, Designing and Making Principles*  |
| **Clarity around knowledge** | **Key Concepts** | **Practical Theme/topics** * Understand the project context and design brief
* Understand NEA mark scheme and marking procedure.
* Understand how to analyse task effectively
* Understand how to evaluate/analyse possible ideas
* Understand why looking at existing products can inform further design development
* Understand why a comprehensive design brief is important to a project
* Understand how to analyse the task you have set yourself effectively
* Identify who potential clients/users might be for the project
* Understand how to identify user/client needs and wants
* Understand how to use Excel to create tables and charts to show questionnaire results
* Understand why looking at existing products and design styles can inform further design development
* Understand why responding to feedback positively can improve final results.
* Understand why working to a detailed specification can aid in focussing design needs and quality of the final design/product
 | **Practical Theme/topics*** Understand why quick sketches can aid in the development of a design.
* Understand the relevance of original ideas
* Understand how using CAD successfully can enhance understanding and quality of designs.
* Understand how modelling can help develop a high- quality design
* Understand the importance of understanding material properties and uses when picking materials to use for this project
* Show knowledge of relevant joining/cutting/decoration methods for your project
* Understand the relevance of ergonomics and anthropometric data in your project.
* Understand the relevance of a manufacturing spec
 | **Practical Theme/topics** * Understand the importance of planning material selection, cost and wastage.
* Understand the importance of being able to provide a 3rd party with a final design drawn to scale that contains enough detail for them to manufacture the product
* Understand that the creation of an interesting, high quality design that reflects the wants and needs of the client/target market is important.
* Understand the importance of recording all stages of manufacture.
* Understand the importance of considering health and safety and quality control checks as work progresses.
 | **Practical Theme/topics** * Understand the importance of writing a detailed evaluation that links to the original specification
* Understand the importance of product testing, 3rd party testing and feedback
* Understand that reflection on work produced is an important part of improving your own practice and making better products in the future. [Suggesting modification of ideas]

**Theory Topics:*** Understand the structure of the exam
* Understand how to structure longer answers for extended questions
* Understand how to use a range of revision techniques to help you remember relevant information
 | **Theory Topics:*** Understand how to structure longer answers for extended questions
* Understand how to use a range of revision techniques to help you remember relevant information
* Understand how completing past paper questions can help you build knowledge and resilience
 |
| **Clarity around Sequencing** |  | Main links across curriculum | * Food Prep and Nutrition-Understand and respond to set brief, ability to experiment, investigate and evaluate, work safely and identify hazards, produce a high-quality outcomes.
 | * Food Prep and Nutrition-Understand and respond to set brief, ability to experiment, investigate and evaluate, work safely and identify hazards, produce a high-quality outcomes.
 | * Food Prep and Nutrition-Understand and respond to set brief, ability to experiment, investigate and evaluate, work safely and identify hazards, produce a high-quality outcomes. Evaluate outcomes
 | * Food Prep and Nutrition-Understand and respond to set brief, ability to experiment, investigate and evaluate, work safely and identify hazards, produce a high-quality outcomes. Evaluate outcomes
 |  |
|  |  | **Cross – curricular / Authentic Links** | * Geography-sustainability, eco-systems
* Science- mechanical systems and types of motion, electronic systems, sustainability, green energy/powering systems, extraction of raw materials, properties of materials, health and safety.
* Biology-waste systems, global warming, deforestation, bio-technology.
* Chemistry-Crude oil, fractional distillation, cracking.
* Physics-forces and elasticity
* Dance- problem solving, independent learning and critical thinking
* RS/PD curriculum- Social, moral and cultural issues and ethics[faith/culture]
* ICT/Business – use of P’shop/excel to create graphs and interpret data. QA/QC, market research and surveys, understanding user and client needs.
* Maths- using graphs
* Art/Textiles- line, tone, colour, space and texture, annotation contextual studies.
* English- using correct SPaG
 | * Art/Textiles- line, tone, colour, space and texture, annotation contextual studies, presentation.
* Chemistry-polymerisation
* Computer Science-cultural and environmental impact
* Dance- problem solving, independent learning and critical thinking
* Drama-ideas, skills and evaluation
* Maths-volume of shapes
* RS-world-wide church and charities
* English- using correct SPaG
 | * Art/Textiles- line, tone, colour, space and texture, annotation contextual studies, presentation and evaluation.
* Chemistry- greenhouse gases, climate change, carbon footprint, atmospheric pollutants
* Dance- problem solving, independent learning and critical thinking, reflection and evaluation
* Drama-ideas, skills and evaluation
* Maths-scale and enlargement, pythagoras’ therum,
* PE-engagement patterns of different social groups, commercialisation and sponsorship
* RS-The abuse of the environment
* English- using correct SPaG
 | * Art/Textiles- line, tone, colour, space and texture, annotation contextual studies, presentation and evaluation.
* Chemistry-using the worlds resources and sustainable development, LCA, recycling, alloys
* problem solving, independent learning and critical thinking
* Drama-ideas, skills and evaluation
* Maths-transformation of shapes and symmetry, plans and elevations
* PE- health and well-being when linked to NEA theme
* Physics-motors and electronics
* RS-peace, religion and conflict
* English- using correct SPaG
 |  |
|  | **Literacy** | **Wider Reading** | * Design styles, designers, font styles and architects to help develop ‘Mood Board’
 | * How to draw in isometric, orthographic, one- and 2-point perspective and exploded views
* Ergonomic design
 | * Materials and manufacturing techniques in school and industry
* How to draw in orthographic projection
 | * Health and safety rules
* Materials and manufacturing techniques in school and industry
 | * Sustainability
 |
| **Vocabulary / Literacy** | **Ext. Writing** | * Task and Analysis
* Product Analysis
* Client Profile
* Specification
 | * Specification
* Annotation on ‘Design and Development’ sheets
 | * Annotation on ‘Design and Development’ sheets
* Materials and Manufacturing techniques
* Manufacturing Specification.
* Annotation on ‘Making Diary’
 | * Evaluation against Specification
* 3rd Party Evaluation and Testing
* Modification of Ideas
 | * Extended exam questions
 |
| **Memory & Cognition** | **Keywords** | * Analysis,
* Specification
* Annotation
* CAD/CAM, CAM machine names- laser cutter, 3D Printer, Router, Laser printer. CAD package- Photoshop, 2D design.
* Iterative design, systems approach to design, user-centred design
 | * Modelling
* Construction
* Nets
* nesting
 | * Ergonomics /anthropometrics
* Analysis
* Manufacturing Specification
* Investigation
* Sustainability
 | * Evaluation
* Modification
 | * Describe
* Evaluate
* Explain
* Express
* Command words
* Sustainability
 |
| **Retrieval Practice** | **Start** | * Recall 3
* Revision roulette of relevant section to sheets they are working on in class
 | * Recall 3
* Revision roulette of relevant section to sheets they are working on in class
 | * Recall 3
* Revision roulette of relevant section to sheets they are working on in class
 | * Recall 3
* Revision roulette of relevant section to sheets they are working on in class
* What do you know about…..?
* Walkabout bingo
 | * Recall 3
* What do you know about…..?
* Cops and robbers
* Walkabout bingo
* Clock Revision
* Revision games
 |
| **On going** | * Recall 3 every lesson
* Open questions in lessons
 | * Recall 3
* Revision roulette of relevant section to sheets they are working on in class
 | * Recall 3
* Revision roulette of relevant section to sheets they are working on in class
 | * Recall 3 every lesson
* Open questions in lessons
* Low stakes quizzes
* Past paper questions
 | * Recall 3 every lesson
* Revision roulette covering whole spec
* Open questions in lesson
* Low stakes quizzes
* Past paper questions
* Clock revision
 |
|  | **End** | * Recall 3

Revision roulette covering whole spec | * Recall 3
* Revision roulette covering whole spec
 | * Recall 3
* Revision roulette covering whole spec
 | * Recall 3
* Revision roulette covering whole spec
 | * Recall 3
* Revision roulette covering whole spec
 |
| **Assessment** | **Summative****Assessment** | All sheets for NEA | All sheets for NEA | All sheets and practical work for NEA | All sheets and practical work for NEA | Past paper questionsFinal Theory exam |
|  | **Possible misconceptions** | - Material names/classification-printing/cutting methods in school and industry | -Types of drawing | -Ergonomics /anthropometrics-Types of drawing-specification points | -Creating/Modelling challenging net shapes -mathematical calculation of materials and their costs | - calculating gear and belt and pully ratios cams -Powering systems  |
| **Aspiring, inspiring and Real** | **Links to real world (Inc. SMSC / PD curricula)** | * Understand the project context and design brief
* Understand how to evaluate/analyse possible ideas
* Understand why looking at existing products can inform further design development
* Understand why a comprehensive design brief is important to a project
* Identify who potential clients/users might be for the project
* Understand how to identify user/client needs and wants
* Understand why looking at existing products and design styles can inform further design development
* Understand why working to a detailed specification can aid in focussing design needs and quality of the final design/product
 | * Understand the relevance of original ideas
* Using CAD/CAM
* Understand the importance of understanding material properties and uses when picking materials to use for this project
* Show knowledge of relevant joining/cutting/decoration methods for your project
* Show knowledge of relevant joining/cutting/decoration methods for your project
* Understand the relevance of ergonomics and anthropometric data in your project.
* Understand the relevance of a manufacturing spec
 | * Understand the importance of planning material selection, cost and wastage.
* Understand the importance of being able to provide a 3rd party with a final design drawn to scale that contains enough detail for them to manufacture the product
* Understand that the creation of an interesting, high quality design that reflects the wants and needs of the client/target market is important.
* Understand the importance of considering health and safety and quality control checks as work progresses.
 | * Understand the importance of product testing, 3rd party testing and feedback
* Understand how to structure longer answers for extended questions
* Understand how to use a range of revision techniques to help you remember relevant information
* *Core Technical Principles*
* *Specialist Technical Principles*
* *Designing and Making Principles*
 | * Understand how to structure longer answers for extended questions
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 |