**Key Stage 3 Curriculum Map** Department: Design and Technology

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| **Subject****Year** | Design and TechnologyYr9 | *Overview/rationale & statement of importance – what learners can expect to gain from studying this subject this year*In Year 9 pupils will be preparing for their options choices and gaining the skills needed in order to go on to the next key stage for Design and Technology. Below is designed to give pupils a flavour of what to expect if pupils choose Design and Technology: using design and technology to solve real life problems and building skills for the future incorporating Science, Maths and Art to their ideas. |
| **No of weeks/lessons** | 12 | 6 | 6 | 4 | 12 |
| **Unit Title** | Cultural Box Project | Hydraulics – Problem Solving design challenge  | Night Light Project | Packaging of Night Light | Extended Design Challenge Project |
| **Objective** | Pupils to design and make a small storage/jewellery box based on cultures around the world. Focussing on materials, properties and joining materials | To introduce pupils to a move advanced mechanical systems to change movement and force through a design challenge. | To build upon knowledge and understanding of electrical components and how they work in the design process | To be able to package the night light using card and a die cutter.To use graphic design to enhance the packaging | To use knowledge and skills acquired from years 7, 8 and 9 to be able to solve a real life design problem. Pupils will identify a problem, work to a client/user and produce a range of designs/prototypes in order to solve the problem. |
| **Iterative Links** | Building on skills from Yr8 clock project and applying a themed design | Building on mechanical systems from the frog/penguin project | Build on simple electronics form Yr8 | Applying skills and knowledge of chocolate bar packaging and sweetie box packing projects from previous years. | Building all knowledge and skills from past two and a half years. |
| **Knowledge & Understanding** | Materials – timbers and polymers along with propertiesCultural identity | Advanced mechanical systems pneumatics and hydraulics. | Knowledge of electrical components i.e. resistors, LDRs and variable resistorsAdvantages of using CAD/CAM | Knowledge of compliant materials i.e. duplex board, non- bleached card | Understand how to work to a client/user needs and wants.Gain knowledge of how to present their ideas (isometric and orthographic drawings)Understand how to draft up a design specification |
| **Skills** | Producing a specificationCommunicating design ideasMaking skillsApplying a theme to the designsApplying Health and Safety | Problem solving skillsDesign skillsTeam work | Soldering, vacuum forming, applying a themeCAD/CAM – using the laser cutter | Die cutting, application of colour theory, lettering design, logo designs | Design and presentation skillsModelling skills in compliant materialsPossibly CAD/CAM using the laser cutter or 3D printerEvaluation and testing skills |
| **Literacy** | Evaluation in the form of a Big Write | Instructional, schematic plans | Specific subject terminology i.e. resistor, light dependent resistor, light emitting diode, transistor  | Slogans, persuasive text | Writing up a specificationEvaluation write up using specific technical language |
| **Numeracy** | Measuring components in mmScale | Angles, measurements | deciphering resistor colour banding | Sizing of text, scale | Sizing up the product, scaled drawings, scaled models, CAD drawings using RD Works. |
| **Assessment** | Design AssessmentMaking AssessmentMaterial questions | Theory – mechanical systems. | Soldering circuitFinal outcome of make | Design assessment of packaging | Design SpecificationDesign IdeasFinal Model |
| **Health and Safety** | H&S worksheet in booklets on safe use of the power tools (hegner saws, pillar drill and disc sander) in accordance with CLEAPS and BS4163:2007 | Risk Assessment on use of craft knives and hot glue guns | Soldering see CLEAPS 1.014 Heat Processes for hazards, risk assessment and control measuresVentilate area for soldering | Use of die cutter – keep fingers away from sharp cutting edgesUse of craft knives | Hot glue guns, craft knives, hot wire cutterCOSHH Regs: 1.047 for hot wire cutter and ventilation required |
| **Cross-curricular** | ScienceArtMathsPSHE | ScienceMathsPSHE | ScienceMaths | ArtBusiness StudiesICT | EnglishMathsICTScienceArt |