Bradfield School - Curriculum Area Booklets.

Subject name: Design Technology

This booklet contains information about what your child will be studying during years 7, 8 and 9.

<table>
<tr><th>Year group</th><th>Content</th></tr>
<tr><td>Year 7:</td><td></td></tr>
<tr><td>Year 7: Engineering problem solving module

<table><tr><td>Lego mass production lines</td></tr><tr><td>Structures beam bridges & towers</td></tr><tr><td>Structures frame construction</td></tr><tr><td>Toothbrush design</td></tr><tr><td>Hovercraft</td></tr><tr><td>Mr Egg - crash testing</td></tr><tr><td>Sustainability (kinder egg)</td></tr><tr><td>New and smart materials</td></tr><tr><td>End of unit quiz</td></tr></table></td><td>The problem solving module is a series of quick fire, hands on projects which introduce students to wide range of skills and concepts. The problems are approached as a team competition with team scores and an overall winner. The students explore engineering concepts through each problem solving activity. The emphasis is on systems that function although some quality craftwork aspects are emphasized. Use of ready made components and jigs are a key feature of this module of work.</td></tr>
<tr><td>Year 7: Processing metals and plastics module.

<table><tr><td>Plastic processing - key rings (basic and illuminated) and the racing car project</td></tr><tr><td>Metal processing</td></tr><tr><td>Making casting moulds</td></tr><tr><td>Drilling techniques</td></tr><tr><td>Use of hand tools</td></tr><tr><td>Line bending machine and vacuum former</td></tr><tr><td>Adhesives</td></tr><tr><td>Cutting and smoothing techniques</td></tr></table></td><td>The students are involved in the design and manufacture of a range of small products in acrylic which enables them to gain experience of working with acrylic and its related processing requirements. (Tools and equipment)
The students are also involved in the design and manufacture of small products in pewter which enables them to gain experience of working with pewter and its related processing requirements. (Casting metal)
The students also design and make a small racing car which is raced against other students cars along a straight track.</td></tr>
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Package of one keyring use of stika machine - vinyl cutter	
Year 7: Technical graphics and computer aided design. Parallel lines / funny face /maze /ufo Clipart CAD creation - Elephant and fish Geometry and dimensioning shapes Shape construction and Mr Robot Toy train side elevation Isometric CAD Laser cut product Toy boat - 3 view orthographic projection	*The students are introduced to a range of new skills based around the software package 2D Design. It enables students to draw precision engineering drawings using international conventions and involves creative opportunities for artistic and technical design. A manufacturing aspect includes a seasonal laser cut product such as an Xmas tree decoration or the British coin collection holder.*
Year 7: Basic food technology skills Using the cooker - savoury / sweet dishes Use of correct equipment Working safely and hygienically working to time Active kids get cooking "1 star chef" award	*The students are introduced to the basics of food processing and the essential routines of working in a food technology room. They develop skills which can be translated to the home environment and gain national certification in Food processing.*
Year 7: Wooden Toy boat project Introduction to types of timber Marking out & Sawing techniques	*The students are introduced to traditional timber processing skills and a wide range of craft tools. The unit provides and essential baseline of skills in marking out, clamping techniques, sawing processes, an awareness of timber grain, types of timber, drilling, chiselling, gluing and assembly of parts. The later part of the project focuses on the packaging of the*

Use of sanding machines Chiselling techniques Drilling techniques - use of jigs Shaping and sculpting timber Assembly and finishing Package NETS Package graphics	*constructed product and involves students in NET construction and graphic design using MS Publisher.*
Year 8: Year 8: Loxley Valley Park design task The Year 8 Technology (and ICT course) develops important key skills related to Enterprise and Teamwork. Each student is a member of a design team and together they produce a redevelopment project based on the derelict brickworks situated in the Loxley Valley. In July, the students present their proposals through displays of work and a "Dragons Den" style presentation to a panel of judges brought in from industry and commerce and the team with the best proposals and designs become the winners of the prestigious "Loxley Valley Challenge Trophy"	*Central to the Loxley valley project is the teams overall plan of their park. The topic introduces concepts of scale and use of geographical skills within their design. The students fine tune and electronically produce their team logo for use in ICT and throughout their manufacturing in technology. Concept sketches are created to illustrate specific aspects of the park and utilise 3d perspective drawing skills .*
Year 8: Souvenir product manufacture for the Loxley Valley Park Laser cut key rings in timber Laser engraved pencil holder Laser engraved cooking utensil Commercial badge and key ring making Bookmarks	*Using the logo that the team have designed and produced on 2D design the image is laser engraved on to a range of materials and then individual products are generated with a range of machinery and tools. The key emphasis for this project is commercial quality and producing items in quantity to make commercially profitable products.*

Pencil sharpeners Drinks mats Sublimated products / T-shirts / bags	
Year 8: Automata / Mechanism project Marking out a lap joint Lap joint construction Investigating mechanisms Designing souvenir automata products Designing mechanisms Machine processes - manual craft processes Product development and manufacture	*The module is a design and make activity that extends the basic timber processing skills from year 7 and introduces students to accurate construction and 3 dimensional design and problem solving. The students design and make a souvenir product that uses mechanisms to produce movement. It can be to advertise the park or a particular ride, character or event in the park.*
Year 8: Food products for the Loxley Valley visitor attraction. Design of a menu for the park café Active kids get cooking "2 Star Chef" award Menu design and production Uniform design	*The students work on a range of food processing activities linked with the food outlets proposed in their Loxley Valley park, the products are photographed and incorporated into menus produced in ICT and Technology. The students also explore designs for staff uniforms for workers in the food outlets of their park and also the development of take away food containers.*
Year 8: Architectural 3D model making Developing complex box nets 2D design CAD of building Laser cut models in card of buildings & assembly	*The unit introduces students to scale model making and encourages problem solving though the development of basic card nets to more complicated nets. The students design and make a range of 3D card models of a theme park building, they decorate and wallpaper the model (to scale) and extend it with the inclusion of details such as internal fittings and decorations.*

Wallpaper and size of building (scale) Extend with small 3D details	
Year 8: Night Light project introduction to soldering Electronic components PCB construction Circuit wizard electronics design Materials investigation CAD and laser cutting Packaging the night light product	*The project introduces electronics systems and it involves building a light sensitive electronic circuit onto a printed circuit board. The students learn to identify various electronic components and they learn how to solder electronic components neatly and accurately. The circuit is incorporated into a small night light unit which shows the Loxley Valley park logo glowing within the illuminescent acrylic sheet that has been cut out using a laser cutter. Students can create many different designs for the night using computer aided design software.*
Year 9:	
Year 9: 3d computer aided design visualisation and design skills. Introduction to Pro desktop 3D CAD 3d Sculpture 3d robot 3d Computer 3d Toy train 3d toy boat (ASSEMBLY) 3d product of the future design Graphic advert -advanced graphic design	*The project introduces advanced CAD software, Pro-desktop version 8. The project is a considerable challenge to all abilities but allows for very advanced extension for the most able. The students follow a series of training exercises using Pro-desktop to build and develop their skills and confidence in 3D modelling. The project then uses these skills in the development of a product of the future, this can be an imaginative 3D design experience. The concluding part of the project uses Publisher for a graphic advertisement for the product, it also introduces the use of Adobe Photoshop for digital processing of the graphics.*
Year 9: Amplifier project Soldering Skills	*The project introduces electronics from a systems approach basis and involves using integrated circuit chips and printed circuit boards. The students develop a product casing that houses the electronic components and engages students by the association of mp3*

Heath & Safety Graphical Designs of Casing CAD Design of Casing Soldering of PCB Assembly of Amplifier CAM Design Showcase Evaluation	*players and IPod technology. The amplifier case gains its green credentials by being made from recycled card packaging. The students learn about basic electronic components and semiconductors as part of this module. Product evolution is also investigated by looking at how products such as Ipods have evolved over time.*
Year 9: Comb jointed box project Production of a comb joint Lid design Vacuum forming techniques Selecting materials Flow chart production plans	*This project introduces students to the idea of carcase construction and producing accurate joint construction in timber. It enables students to experience using a range of marking out and cutting tools and leads onto industrial processes of vacuum forming. The project allows for individual creativity by focusing on a unique lid design with decorative details added using a range of craft processes and decorative components.*
Year 9: Advanced food technology skills, developing a commercial food product. Exploring food recipes Selection and food product development Packaging and preservation Product marketing Card Nets for Food packages "3 Star Chef" award	*The module includes making a selection of sweet and savoury products which would be suitable to sell in a shop. The students select the most suitable dish that they have created and they develop and improve it to create a NEW FOOD PRODUCT. The product is made and its commercial viability is explored.*
Year 9: The Neck Warmer textiles project. Introduction to textiles	*This module introduces students to textiles based work. Students learn how to thread and use sewing machines and also how to thread and use the CNC embroidery machines on their textiles products. Many creative designs are*

Using programmable sewing machines Sewing machine skills Computerised embroidery machine use Textile design skills	*embroidered onto fabric prior to manufacturing. The outcome is a commercial quality textile product.*
Year 9: Jewellery project	***New for September 2012*** *a module of work which focuses on the fashion industry and fashion jewellery. A wide range of materials are combined to create stylish modern jewellery products.*