KS3 Design & Technology Curriculum at a glance

DESIGN & TECHNOLOGY

BE BOLD, BE BRAVE, BE BRILLIANT

- Designing
- Making
- Technical knowledge
- Analyse & Evaluating

Year 9 Term 6

- Lisi Aerospace is an engineering company that specialise in aircraft components manufacturing.
- Context mapping encourages an empathetic approach to analysing and investigating the design situation
- Quad of Aims - Purpose, Impact (customer), weight reduction and strength optimisation.
- Make use of charts and graphs to communicate research methods of products and services.
- When looking at 'Potential time and possible tribulations' it is an opportunity to look at Gantt charts and similar, to begin to plan their time and highlight any possible issues that may arise.
- A card model is an effective way to test & evaluate the effectiveness of designs and provide a cost-effective way to visualise common mistakes.
- Use CAD to and related software to validate, text and prototype designs.
- Wheelchairs have been created using generative design and used additive manufacture to manufacture them.
- Some S-shaped hooks of different sizes, thicknesses and designs, and then test them by hanging weights from them.
- Textiles and New Materials - natural & synthetic fibers, woven fabrics. Kevlar.
- Smart & Modern Materials - Shape memory alloys, Graphene, Thermochromic pigments.
- Exploded and cross sectional drawings.
- Testing a product allows the designer(s) to identify problems and make changes to fit the brief and/or specification.
- Static or dynamic testing allows for deeper evaluative information.

Year 9 Term 5

Year 9 Term 4

Year 9 Term 3

Big Question – Does Weight Compromise Strength?

lisi AEROSPACE Fasteners

- **Electronic and digital** technologies are increasingly being incorporated into garments where they have the ability to interact with the body and control micro-environments and **express emotions.**
- LED stands for Light Emitting Diode. LED's can be used within textiles, known as e:textiles
- Implication of 'double diamond' design journey
- Identifying a brief and writing a specification.
- Make use of charts and graphs to communicate research methods of products and services.
- Design sketching - hand rendering 3 dimensional shapes to instigate design choices.
- A card model is an effective way to test & evaluate the effectiveness of designs and provide a cost-effective way to visualise common mistakes.
- Use CAD to and related software to validate, text and prototype designs.
- Corrugated card construction techniques including joining and fixings.
- Textiles and New Materials - natural & synthetic fibers, woven fabrics. Kevlar.
- Smart & Modern Materials - Shape memory alloys, Graphene, Thermochromic pigments.
- Recognising when it is necessary to develop a new skill or technique, i.e smart materials and their application.

Year 9 Term 2

Year 9 Term 1

Big Question – Can You Wear Technology

- Context mapping through Why, What, How, When & Who
- Secondary research is a research method that uses data acquired by someone else.
- Design empathy is the ability to put yourself in someone else shoes.
- Pink Pen development is used to make changes and identify modifications to pre-existing objects and forms.
- World Class development sheets include annotation, range of ideas, and accurate drawings in three dimensions.
- Vacuum forming is a method of shaping thermoplastic over a former.
- A card model is an effective way to test & evaluate the effectiveness of designs and provide a cost-effective way to visualise common mistakes.
- The laser cutter is an example of CAM and is operated using 2D Design(Techsoft) and RD Works. Red lines are cut lines. Blue lines are engrave lines and green lines are engrave fill.
- Corrugated card construction techniques including joining and fixings.
- Use workshop tools and equipment in a safe and secure manner.
- Types of manufactured wood: Plywood, MDF & Particle Board.
- Jigs and templates are used to gain accuracy and consistency during construction and manufacturing.
- Assembly of a 'one off' product is more expensive, takes more time and is often bespoke to the end user.

Year 8 Term 6

Year 8 Term 5

Year 8 Term 4

Big Question – Can Products Rescue Humans?

- Empathy is a key design strategy
- ACCESSFM is used to analyse appropriate products, services and environments.
- Building a client interview & profile.
- Design Page creation: Annotation What material? What does it do? Possible finish? Fold lines? Dimensional drawing - describe the object. Shading - Rendering drawings helps to make your design clearer. **Detail** -Draw specific details to show HOW the product works.
- .What are resources ? Where are they used in product design?
- A NET is a 2 Dimensional shape that is able to create a 3D form.
- Tessellations are used to reduce the amount of waste material during manufacture.
- A ruler and accurate measurements must be used to create an accurate NET.
- A card model is an effective way to test & evaluate the effectiveness of designs and provide a cost-effective way to visualise common mistakes.
- How can research influence your design choices?
- Programming is an iterative design process and block programming is a suitable strategy.
- Tin snips are used to shear cut sheet metal, normally up to 3mm thick. A junior hacksaw is used to cut straight lines and get rid of large waste material. A file or needle file is used to file down sharp edges and to smooth edges of sheet metal. Flat file is used with 'draw filing' technique.
- Abrasive paper is used from rough grit to smooth(fine) grit. Green to black to grey.
- Testing a product allows the designer(s) to identify problems and make changes to fit the brief and/or specification.

Year 8 Term 3

Year 8 Term 2

Year 8 Term 1

Big Question – Should We Sleep In The Dark?

- Eco design is a way of looking at design with a particular focus on the environmental impacts of the product during its whole lifecycle.
- .How do products affect us? What's the first thing you think about– *perhaps make the product from a different material?*
- .What are resources ? Where are they used in product design?
- Cradle to Grave: So, from raw material extraction through material processing, manufacture, distribution, use, repair and maintenance, and disposal or recycling.*Mr Hill's View: This makes us more 'responsible designers', that is carefully considering the 'wider issues of design' and its potential impact on the environment.*
- Use Pink Pen strategy to reimagine existing products. The 6 R's of sustainability.
- Blue lines engrave, red lines cut. All lines in 2D Design must overlap.
- Acrylic is a thermoplastic.
- A cylindrical shape product will need 3 separate pieces; a base, a top & a side.
- Your initial prototype will be made from corrugated cardboard.
- Accurate templates allow the designer to tessellate.
- A selection of measured and cut card ready for assembly.
- Use joining techniques such as 'tab and slot'.

Year 7 Term 6

Year 7 Term 5

Year 7 Term 4

the DESIGN MUSEUM

Big Question – Can Junk Become Funk?

- Wood - hardwood & softwood, Metal: Ferrous & non ferrous. Plastic: thermo and thermoset.
- Scales of production: One off, batch & mass production.
- One off Production: Highly skilled workers,Unique,Time consuming ,High quality , Specialist products, Expensive. Batch Production: Semi- skilled workers, Set number of products, Use of machines, All identical, Cheaper. Mass Production: Unskilled workers, Large quantity of products, Automated , All identical, Fast & Cheapest.
- Design Iteration: Each product starts off as a very simple shape and becomes more detailed and complex as the designer develops their ideas.
- Annotation: labelling a design drawings with key information. ACCESSFM.
- Cognitive modelling (mind's eye) is useful but physical modelling allows you to iterate designs.

Card Modelling

- The sprue is the area of a mould in which the chosen material is poured.
- Blue lines engrave, red lines cut. All lines in 2D Design must overlap.
- Exit: Which type of plastic can be reshaped and reformed?
- A junior hacksaw is used to cut straight lines and get rid of large waste material.
- A file or needle file is used to file down sharp edges and to smooth edges of metal. Flat file is used with 'draw filing' technique.
- Abrasive paper is used from rough grit to smooth(fine) grit. Green to black to grey.

Year 7 Term 3

Year 7 Term 2

Year 7 Term 1

V&A

Big Question – What Can Pewter Do?