



KHALSA PRIMARY SCHOOL DT OVERVIEW



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At Khalsa Primary School we believe that Design and Technology plays a **crucial role in the future** of our society. Our rapidly changing future relies on **new solutions to help people and then planet**. With an **ambitious and innovative** curriculum, we aim to inspire our pupils to pursue STEAM education and careers that require both **creativity and critical thinking**. In our D&T lessons, we focus on working to solve relevant problems by tapping into our pupils' **natural curiosity and creativity**, facilitating exploration and experimentation with targeted deeper questioning.

Enrichment Opportunities in Design and Technology

We broaden pupils' ideas of how Design and Technology is **applicable in daily life**. This is achieved through **researching** ground-breaking scientists and designers relevant to the strand pupils are studying. We contextualise the materials and techniques used by placing them in history and considering the impact it would have had on people at the time.

Pupils learn about **Design and Technology beyond the classroom** by participating in local initiatives, having skilled visitors for workshops, and experiencing school trips to high profile Art institutions. We aim for our pupils to experience at least two activities inspired by STEAM – external visits or workshops – by the time they graduate in Year 6.

We value Design and Technology and **promote it at home** through invitations to join in with holiday projects and term time competitions. **Parents** often support with cooking and nutrition – whether this is physically helping the pupils or by donating ingredients for the class to use. Our **PTA** work alongside Year 6 to create **enterprising** ideas for our Winter and Summer fetes – this allows pupils to **showcase** their technical skills of constructing, but also pushes them to budget and consider their customers.

	Autumn 1	Spring 1	Summer 1
Reception	DT	DT	DT
	Main Artists: Bharti Kher/Yayoi Kusama	Main Artists: Romuald Hazoume/Parviz Tanavoli	Main Artist: Olinda Silvano
	<p>Key Content: Celebration cards with cut out shapes glued on to add detail/decoration. Paper lanterns – could add dots Adding detail with dots/shapes Make salt dough divas/decorations and decorate with dots</p> <p>ELG: Use a range of small tools, including scissors Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.</p>	<p>Key Content:Junk modelling Exploring joining methods Children create a model of something related to their interests/topic.</p> <p>ELG: Safely use and explore a variety of materials, tools and techniques, experimenting with form and function. Share their creations, explaining the process they have used. Make use of props and materials when role playing characters in narratives and stories.</p>	<p>Key Content:Textiles intro Weaving Sewing into hessian with plastic needles Children may create a bookmark or other patterns piece of fabric – could be inspired by minibeasts (spiderwebs, bee buzz lines etc).</p> <p>ELG: Develop their small motor skills so that they can use a range of tools competently, safely and confidently. Use a range of small tools (needles) Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Share their creations, explaining the process they have used.</p>
Key vocabulary: cutter, knead, press, push, roll, rolling pin, salt dough, squash	Key vocabulary: join, stick, cut, bend, slot, smooth, bendy, bumpy	Key vocabulary: thread, weave, pinch, push,pull, through, under, over up, down, pattern	
	Autumn 2	Spring 2	Summer 2
Year 1	DT	DT	DT
	Main Architect: Sir Norman Foster	Main Designer: Gottlieb Daimler	Main Artist: Jim Henson
	<p>Key Content: Identify some features that would appeal to the client (a mouse) and create a suitable design. Explain how their design appeals to the mouse. Make stable structures, which will eventually support the turbine, out of card, tape and glue. Make functioning turbines and axles that are assembled into the main supporting structure. Say what is good about their windmill and what they could do better.</p>	<p>Key Content: Explain that wheels move because they are attached to an axle. Recognise that wheels and axles are used in everyday life, not just in cars. Identify and explain vehicle design flaws using the correct vocabulary. Design a vehicle that includes functioning wheels, axles and axle holders. Make a moving vehicle with working wheels and axles. Explain what must be changed if there are any operational issues.</p>	<p>Key Content: Create puppets related to geography/science learning (i.e. animals). Join fabrics together using pins, staples or glue. Design a puppet and use a template. Join their two puppets' faces together as one. Decorate a puppet to match their design.</p>
Key vocabulary: Client, Design, Evaluation, Net, Stable ,Strong, Test, Weak, Windmill	Key vocabulary: axle axle holder chassis diagram dowel equipment mechanism wheel	Key vocabulary: decorate design fabric glue model hand puppet safety pin staple stencil template	
	Autumn 2	Spring 2	Summer 2
Year 2	DT	DT	DT
	Main Designer: Julia Barfield	Main Designers: Lilly Reich/Hans J. Wegner/Verner Pantan/ Ray Eames	Main Designers: Vivienne Westwood/Coco Chanel
	<p>Key Content: Design and label a wheel. Consider the designs of others and make comments about their practicality or appeal. Consider the materials, shape, construction and mechanisms of their wheel. Label their designs. Build a stable structure with a rotating wheel. Test and adapt their designs as necessary. Follow a design plan to make a completed model of the wheel.</p>	<p>Key Content: Identify man-made and natural structures. Identify stable and unstable structural shapes. Contribute to discussions. Identify features that make a chair stable. Work independently to make a stable structure, following a demonstration. Explain how their ideas would be suitable for Baby Bear. Produce a model that supports a teddy, using the appropriate materials and construction techniques. Explain how they made their model strong, stiff and stable.</p>	<p>Key Content: Sew a running stitch with regular-sized stitches and understand that both ends must be knotted. Prepare and cut fabric to make a pouch from a template. Use a running stitch to join the two pieces of fabric together. Decorate their pouch using the materials provided. Design a pouch for someone who might want to take it to Kampong Ayer.</p>
Key vocabulary: design criteria wheel Ferris wheel pods axle holder frame mechanism	Key vocabulary: design criteria man-made natural properties structure stable shape model test	Key vocabulary: decorate fabric glue knot needle threader running stitch sew template thread	

		Autumn 2	Spring 2	Summer 2
Year 3		DT	DT	DT
		Main Designer: Paula Scher	Main Engineer: Charles Brady King	Main Architect: Zaha Hadid
		<p>Key Content: Explain what 'information design' is and understand its impact, considering what could happen if we had no signage, posters, or written communication in public places of interest. Research and choose a specific Ancient Roman topic on which to base their initial poster ideas. Complete design criteria based on a client's request. Roughly sketch four initial poster ideas, indicating where a bulb will be located for each. Review their initial ideas against the design criteria and peer feedback, developing a final design. Assemble an electric poster, including a functional simple circuit with a bulb, following a demonstration. Acknowledge, with a brief explanation, the need to mount the poster using corrugated card. Test that the simple circuit works by adding a battery. Evaluate their electric posters in a letter to a client. Create an educational poster design (could be created digitally) with electronic circuit attached underneath, which includes a light up element. (Linked with earthquakes/eruptions). *Possible museum visit to Natural History Museum*</p>	<p>Key Content: Draw accurate diagrams with correct labels, arrows and explanations. Correctly identify definitions for key terms. Identify five appropriate design criteria. Communicate two ideas using thumbnail sketches. Communicate and develop one idea using an exploded diagram. Select appropriate equipment and materials to build a working pneumatic system. Assemble their pneumatic system within the housing to create the desired motion. Create a finished pneumatic toy that fulfils the design brief. Design and create a pneumatic toy for a younger child. (Toy might be based on wildlife found in North America/Everglades).</p>	<p>Key Content: Try out different ways to make card shapes three dimensional, e.g. folding and curving the card or joining the flat shapes together. Make a structure that holds its 3D shape. Explain in simple terms the difference between 2D and 3D art. Combine shapes together to make an interesting free-standing sculpture. Try out more than one way to create joins between shapes. Identify familiar 2D shapes in photographs. Identify shapes in the negative space between objects. Draw a cardboard model from different angles, focusing on shapes in the positive and negative space to achieve an abstract effect. Plan an abstract sculpture based on play equipment. Show that they have learned how to shape materials in more than one way (e.g. by folding and rolling). Choose appropriate methods for joining elements in their sculptures. Show that they have thought about how to improve their sculptures and made choices about what to add. Work cooperatively in pairs to add detail to their artwork.</p>
		<p>Key vocabulary: information design public design criteria research initial ideas bulb self-assessment peer assessment feedback develops final design</p>	<p>Key vocabulary: mechanism lever pivot linkage system pneumatic system input output component thumbnail sketch research adapts properties reinforce motion</p>	<p>Key vocabulary: abstract found objects negative space positive space sculptor sculpture structure three-dimensional</p>
Year 4		Autumn 2	Spring 2	Summer 2
		DT	DT	DT
		Main Designers: Alvin Lustig/Vanessa Bell	Main Engineer: Carl Benz	Main Scientist: Grace Hopper
		<p>Key Content: Identify the features, benefits and disadvantages of a range of fastening types. Write design criteria and design a sleeve that satisfies the criteria. Make a template for their book sleeve. Assemble their case using any stitch they are comfortable with. Investigate traditional and modern methods of protecting books/tablets – know why it is so important to protect historic books from damage. Evaluate different fastenings. Design and create a mock up of their themed sleeve. (Learn applique skills in this unit too if time allows). Sew and decorate envelope/jacket style sleeve.</p>	<p>Key Content: Learn about chassis and slingshot mechanisms. Create a sling shot car. Children could be challenged to measure and saw wooden dowels to create the chassis, rather than using lollipop sticks. Investigate how transport has changed over time (link with Romans and present day). Design and create body of car and race to see which one is most aerodynamic. Work independently to produce an accurate, functioning car chassis. Design a shape that is suitable for the project. Attempt to reduce air resistance through the design of the shape. Produce panels that will fit the chassis and can be assembled effectively using the tabs they have designed. Construct car bodies effectively. Conduct a trial accurately and draw conclusions and improvements from the results.</p>	<p>Key Content: Research existing products relating to mindfulness. Explore programming and making code with BBC micro: bit. Design and make a prototype of a mindful moment timer.</p>
	<p>Key vocabulary: Criteria Fabric Fastening Fix Mock-up Stitch Template</p>	<p>Key vocabulary: chassis energy kinetic mechanism air resistance design structure graphics research model template</p>	<p>Key vocabulary: Research, Advantage, Disadvantage, Criteria, Design Ergonomic</p>	

	Autumn 2	Spring 2	Summer 2
Year 5	Main Artist: Colette Fu	Main Craftspeople: Jackie Cardy/Rae Woolnough	Main Engineer: Isambard Brunel
	<p>Key Content: Revisit and experiment with the mechanisms of sliders, pivots and folds to produce movement. Create a pop-up book related to topic learning, i.e. could detail how volcanoes affect the lives of people. Produce a suitable plan for each page of their book. Produce the structure of the book. Assemble the components necessary for all their structures/mechanisms. Hide the mechanical elements with more layers using spacers where needed. Use a range of mechanisms and structures to illustrate their story and make it interactive for the users. Use appropriate materials and captions to illustrate the story.</p>	<p>Key Content: Explore uses of felt throughout history. Design a product related to rivers, e.g. for a giftshop. Learn a variety of embroidery techniques and how to attached beads/buttons. Learn how to wet felt and create a group product.</p>	<p>Key Content: Discover arch and beam bridges and learn to strengthen them. Make a spaghetti truss bridge. Accurately measure and cut wood to create a bridge. Identify stronger and weaker shapes. Recognise that supporting shapes can help increase the strength of a bridge, allowing it to hold more weight. Identify beam, arch and truss bridges and describe their differences. Use triangles to create simple truss bridges that support a load (weight). Cut beams to the correct size, using a cutting mat. Smooth down any rough cut edges with sandpaper. Follow each stage of the truss bridge creation as instructed by their teacher. Complete a bridge, with varying ranges of accuracy and finish, supported by the teacher. Identify some areas for improvement, reinforcing their bridges as necessary</p>
	<p>Key vocabulary: design input motion mechanism criteria research reinforce model</p>	<p>Key vocabulary: Felting, needle, spinning, threads, sequins, embroidery, fibres, layer,</p>	<p>Key vocabulary: beam bridge arch bridge truss bridge strength technique corrugation lamination stiffness rigid factors stability visual appeal aesthetics joints</p>
Autumn 2	Spring 2	Summer 2	
Year 6	Main Entrepreneur: Corinne Vigreux	Main Designers: Stella McCartney/Thomas Burberry	Main Engineer: Ismail al-Jazari
	<p>Key Content: Incorporate key information from a client's design request such as 'multifunctional' and 'compact' in their design brief. Write a program that displays an arrow to indicate cardinal compass directions with an 'On start' loading screen. Identify errors (bugs) in the code and suggest ways to fix (debug) them. Self and peer evaluate a product concept against a list of design criteria with basic statements. Identify key industries that use 3D CAD modelling and why. Recall and describe the name and use of key tools used in Tinkercad (CAD) software. Combine more than one object to develop a finished 3D CAD model in Tinkercad. Complete a product pitch plan that includes key information.</p>	<p>Key Content: Consider a range of factors in their design criteria and use this to create a waistcoat design. Use a template to mark and cut out a design. Use a running stitch to join fabric to make a functional waistcoat. Attach a secure fastening, as well as decorative objects. Evaluate their final product.</p>	<p>Key Content: Mark, saw and cut out the components and supports of their toy with a varying degree of accuracy to the intended measurements. Follow health and safety rules, taking care with the equipment. Attempt a partial assembly of their toys using an exploded-diagram, following a teacher's demonstration. Develop a design idea with some descriptive notes. Explore different cam profiles and choose three for their follower toppers with an explanation of their choices. Create neat, decorated follower toppers with some accuracy. Measure and cut panels that fit with some inaccuracies to conceal the inner workings of the automata. Decorate and finish the automata to meet the design criteria and brief. Evaluate their finished product, making descriptive and reflective points on function and form.</p>
	<p>Key vocabulary: smart smartphone equipment navigation cardinal compass application (apps) pedometer GPS tracker design brief design criteria client function program duplicate</p>	<p>Key vocabulary: annotate decorate design criteria fabric target customer waistcoat waterproof</p>	<p>Key vocabulary: accurate assembly-diagram automata axle component cutting list diagram bench hook cam clamp drill bits exploded-diagram finish</p>
Autumn 2	Spring 2	Summer 2	