

Intent



Design and Technology is an inspiring, rigorous and practical subject. Design and Technology encourages children to learn to think and intervene creatively to solve problems both as individuals and as members of a team. At Alexandra Park Junior School, we encourage children to use their creativity and imagination, to design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. We aim to, wherever possible, link work to other disciplines such as mathematics, science, engineering, computing and art. The children are also given opportunities to reflect upon and evaluate past and present design technology, its uses and its effectiveness and are encouraged to become innovators and risk-takers.

Implementation



Through a variety of creative and practical activities, we teach the knowledge, understanding and skills needed to engage in an iterative process of designing and making. The children design and create products that consider function and purpose and which are relevant to a range of sectors (for example, the home, school, leisure, culture, enterprise, industry and the wider environment).

When designing and making, the children are taught to:

Designi

- ·use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups.
- · generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional diagrams, prototypes, pattern pieces and computer-aided design.
 Make:
- · select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing, as well as chopping and slicing) accurately.
- · select from and use a wider range of materials, ingredients and components, including construction materials, textiles and ingredients, according to their functional properties, aesthetic qualities and, where appropriate, taste.

Èvaluate

- · investigate and analyse a range of existing products.
- · evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.
- \cdot understand how key events and individuals in design and technology have helped shape the world:

Technical knowledge:

- ert apply their understanding of how to strengthen, stiffen and reinforce more complex structures.
- · understand and use mechanical systems in their products.
- · understand and use electrical systems in their products.
- \cdot apply their understanding of computing to program, monitor and control their products
- \cdot Understand some of the ways that food can be processed and the effect of different cooking practices (including baking and grilling).

Key skills and key knowledge for D and T have been mapped across the school to ensure progression between year groups. The context for the children's work in Design and Technology is also well considered and children learn about real life structures and the purpose of specific examples, as well as developing their skills throughout the programme of study. Design and technology lessons are also taught as a block so that children's learning is focused throughout each unit of work.

Impact



We ensure the children:

- · develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- · build and apply a repertoire of knowledge, understanding and skills in order to design and make highquality prototypes and products for a wide range of users and critique, evaluate and test their ideas and products and the work of others
- · understand and apply the principles of nutrition and learn how to cook. Children will design and make a range of products. A good quality finish will be expected in all design and activities made appropriate to the age and ability of the child

Children learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

Progression of knowledge and skills



KS2

NATIONAL CURRICULUM REQUIREMENTS

Design:

use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer aided design

Make:

select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities

Evaluate:

investigate and analyse a range of existing products • evaluate their ideas and products against their own design criteria and consider the views of others to improve their work understand how key events and individuals in design and technology have helped shape the world

Technical knowledge:

apply their understanding of how to strengthen, stiffen and reinforce more complex <u>structures</u> understand and use mechanical systems in their products [for example, gears, pulleys, cams, <u>levers</u> and linkages] understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, <u>buzzers</u> and motors] apply their understanding of computing to program, monitor and control their products.

Cooking and Nutrition:

understand and apply the principles of a healthy and varied <u>diet</u>
prepare and cook a variety of predominantly <u>sayoury</u> dishes using a range of cooking techniques understand seasonality, and know where and how a variety of ingredients are <u>grown</u>
reared, caught and processed

	•			
STRAND	Y3	Y4	Y5	Y6
DESIGN MAKE EVALUATE TECHNICAL KNOWLEDGE COOKING AND NUTRITION	SCONES (Food) I can show that my design meets a range of requirements. I can put together a plan which shows the equipment and tools I need. I can describe a design using an accurately labelled diagram/ annotated sketch. I can use a range of tools and equipment accurately. I can choose the right ingredients for a product. I can say what to do to be hygienic and safe. I can use equipment safely. I can make sure that my product looks attractive. I can eacribe how my combined ingredients come together. I can practise my evaluation skills by evaluating existing products. I can evaluate my own products. I can evaluate my own products. I can suggest a change that could be made to improve a product. STONE AGE DWELLING (Structures) I can show that my design meets a range of requirements. I can put together a plan which shows the equipment and tools I need. I can describe a design using an accurately labelled diagram/ annotated sketch. I can use a range of tools and equipment accurately. I can measure, mark out, assemble and join materials and components with some accuracy. I can evaluate my own products. I can explain how to join things in a different way. I can explain how to join things in a different way. I can think about how to make my product strong. I can devise a template.	BATH BOMES I can design with purpose by identifying opportunities to design. I can create cross-sectional diagrams to demonstrate my design. I can use a range of tools and equipment accurately. I can measure ingredients to the nearest gram accurately. I can follow a set of instructions or a recipe. I can disassemble products to understand how they work. I can refine work and techniques as my work progresses, continually evaluating the product design. I can improve upon existing designs, giving reasons for choices. HEALTHY SANDWICHES (Food) I can design with purpose by identifying opportunities to design. I can create cross-sectional diagrams to demonstrate my design. I can prepare ingredients hygienically using appropriate utensils. I can measure ingredients to the nearest gram accurately. I can follow a set of instructions or a recipe. I can disassemble products to understand how they work. I can refine work and techniques as my work progresses, continually evaluating the product design. I can improve upon existing designs, giving reasons for choices.	MOON BUGGY (Mechanisms) I can come up with a range of ideas after I have collected information. I can produce a detailed step-by step plan. I can use exploded diagrams to show my design. I can produce prototypes to show my ideas. I can cut materials more accurately. I can measure and mark out accurately to the nearest millimetre. I can use a range of tools and equipment expertly. I can explain how to join things in a different way I can test and evaluate my final product. I can evaluate the design to suggest improvements, considering the materials and methods that have been used. I can evaluate the appearance and function against the original criteria. I can think about the functionality of my work. I can develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding). I can use innovative combinations of electronics (or computing) and mechanics in product designs. I can create series and parallel circuits. I can use scientific knowledge of the transferences of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears) I can convert rotary motion to linear using cams.	CRUMBLE PROGRAMMABLE ALARM (Electrical Systems) I can design with the user in mind, motivated by the service a product will offer (rather than simply for profit). I can use prototypes, and computer aided designs to represent designs. I can cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape). I can make products through stages of prototypes, making continual refinements. I can ensure products have a high quality finish, using art skills where appropriate. I can evaluate the design of products so as to suggest improvements to the user experience, I can combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. I can create circuits using electronics kits that employ a number of components (such as LEDs, resistors, transistors and chips). I can use a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filling and sanding). I can use innovative combinations of electronics (or computing) and mechanics in product designs. I can write code to control and monitor models or products. I can control and monitor models using software designed for this purpose. I can use software to design and represent product designs.

PUPPETS (Mechanisms)

I can show that my design meets a range of requirements.

I can put together a plan which shows the equipment and tools I need.

I can describe a design using an accurately labelled diagram/ annotated sketch.

I can use a range of tools and equipment accurately.

I can measure, mark out, assemble and join materials and components with some accuracy.

I can look at products and talk about how they work. I can evaluate my own products.

I can suggest a change that could be made to improve a

I can explain how to join things in a different way.

WEAVING (Textiles)

I can design with purpose by identifying opportunities to design.

I can create cross-sectional diagrams to demonstrate my design.

I can identify some of the great designers in all of the areas of study (including pioneers in horticultural techniques) to generate ideas for

I can name the tools and materials I have used. I can use large eve needles.

I can weave paper and found materials.

I can create weavings.

I can use simple applique, knot, fray, fringe, twist or plait threads/fabrics.

I can choose suitable techniques to construct products.

I can strengthen materials using suitable techniques.

I can apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut-outs). I can select appropriate joining techniques. I can select the most appropriate techniques to decorate textiles.

I can choose textiles for a purpose.

I can join textiles of different types in different wavs.

CUPCAKES (Food)

I can come up with a range of ideas after I have collected information.

I can produce a detailed step-by step plan.

I can use exploded diagrams to show my design.

I can produce prototypes to show my ideas. I can use a range of tools and equipment

expertly. I understand the importance of correct storage and handling of ingredients.

I can measure accurately and calculate ratios of ingredients to scale up or down from a recipe. I can demonstrate a range of baking and cooking techniques.

I can assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking). I can practise my evaluation skills by evaluating existing products against criteria which I have

I can explain why my finished product is going to be of good quality.

I can explain how my product will appeal to the audience. I can think about the aesthetic qualities of my work.

VIKING HELMETS (Structures)

I can come up with a range of ideas after I have collected information.

I can produce a detailed step-by step plan. I can use exploded diagrams to show my design.

I can produce prototypes to show my ideas.

I can cut materials more accurately.

I can measure and mark out accurately to the nearest millimetre

I can use a range of tools and equipment expertly.

I can explain how to join things in a different

can test and evaluate my final product. I can evaluate the design to suggest improvements, considering the materials and

I can evaluate the appearance and function against the original criteria.

methods that have been used.

VOLCANO (Structures)

I can use prototypes, and computer aided designs to represent designs.

I can create innovative designs that improve upon existing products

I can make products through stages of prototypes, making continual refinements.

I can ensure products have a high quality finish, using art skills where appropriate.

I can evaluate the design of products so as to suggest improvements to the user experience, I can combine elements of design from a range of inspirational designers throughout history, giving reasons for choices

SEWING (Textiles)

I can use prototypes, and computer aided designs to represent designs. I can create innovative designs that improve upon

existing products

I can join textiles with a combination of stitching techniques (such as back stitch for seams and running stitch to attach decorations).

I can use different grades and uses of threads and needles

I can make products through stages of prototypes. making continual refinements.

I can ensure products have a high quality finish, using art skills where appropriate.

I can evaluate the design of products so as to suggest improvements to the user experience.

I can combine elements of design from a range of inspirational designers throughout history, giving reasons for choices.

I can show an understanding of the qualities of materials to choose appropriate tools to cut and shape (such as the nature of fabric may require sharper scissors than would be used to cut paper). I can use the qualities of materials to create suitable visual and tactile effects in the decoration of textiles.

Next Steps



- Continue to consistency across all year groups in following all aspects of the policy, including with new members of staff and those changing to a different year group.
- To improve outcomes for children in Design and Technology
- Continue to monitor planning through scrutiny and provide support for those who need it.
- Moderation of work within year groups and sharing of good practice.
- Develop staff subject knowledge through 'CPD development day.' Have a specific focus.
- Continue enrichment of Design and Technology across school (Dragon's Den).
- Increase accuracy in assessment.
- Support Staff who are planning Design and Technology to ensure units are planned and taught effectively.

Displays







Dragon's Den







Linking Project

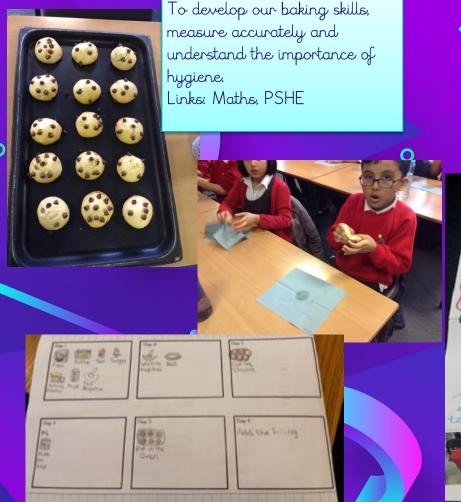








As part of our school linking project we have been lucky enough to go to Saddleworth Cookery school to learn how to cook amazing recipes.



Year 3° Scores Autumn 2





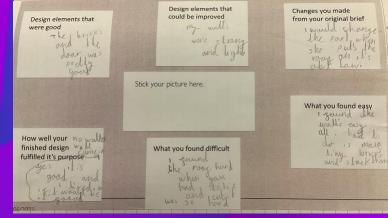
What you found easy

I found pulling the clay on topofthe

Inlly Sticks

Design elements that could be improved the folly Stick because it did not blick with the clay

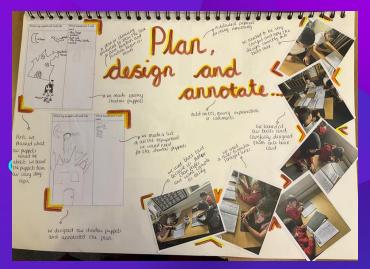
Year 3.
Stone Age
Dwellings
Summer 1



Changes you made from your original brief

I put the stringon because it keptor falling down





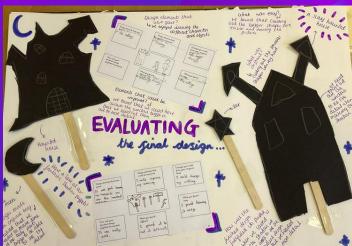




Year 3
Puppet Theatre
Summer 2

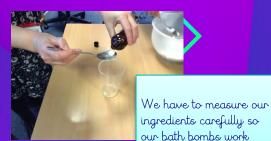








We write a set of instructions to share so others could make both bombs too.
Linki Writing: Instructions



We create a design criteria so we know who our product is for:



We create mood boards to help us with out design

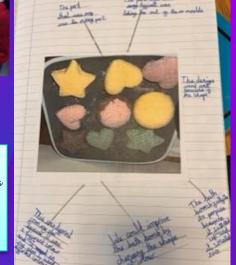


Year 4
Bath Bombs
Autumn 2

Linki Maths- measures



We use equipment such as moulds to make sure we get the right shape.



Researched existing products



We design a structure we think could withstand an earthquake.



We make our structure, picking which materials we think will work best and add trusses for stability.



We test our final product on our jitterbug earthquake table to see whose is left standing.

· I did well on spreading the cheese so we have some dairy on our sandwhich.

It was holly healthy because lettuce gives you the nutrients you need.

AI could have got brown bread instead of white bread.

We make our sandwiches following our design, We make sure we practice good hygiene and use equipment safely.



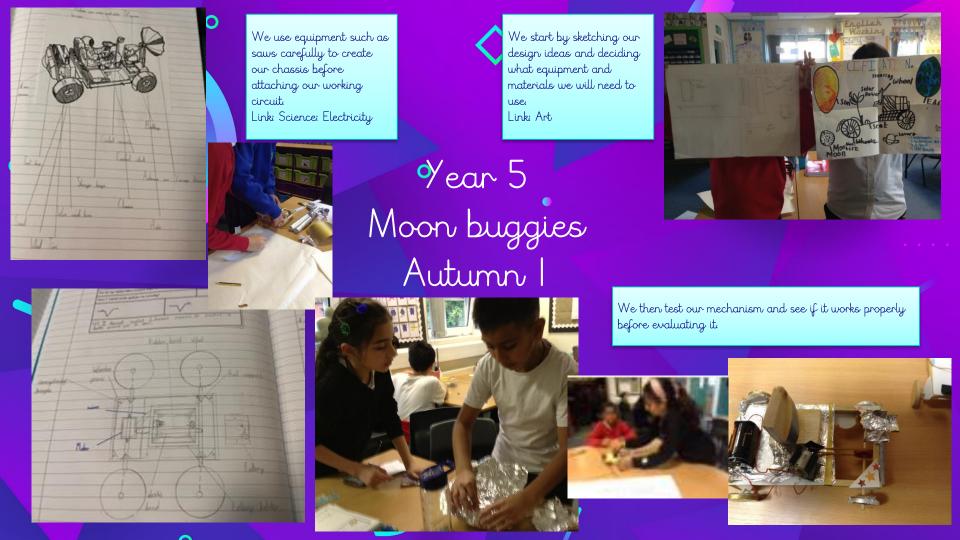


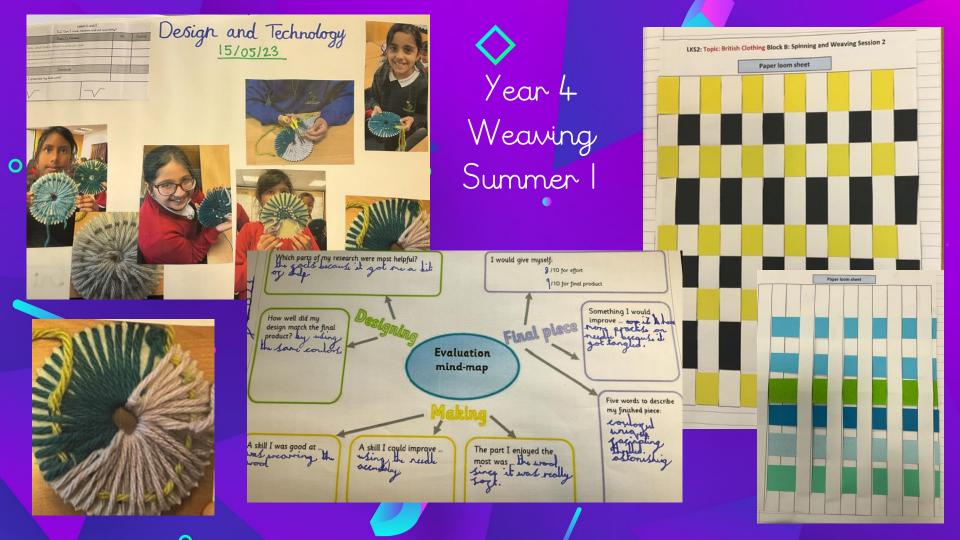
We design our sandwiches.



We then eat our sandwiches for our Alice in Wonderland themed tea party







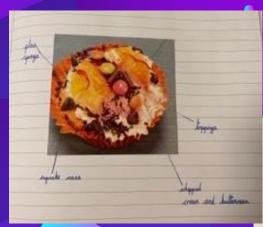


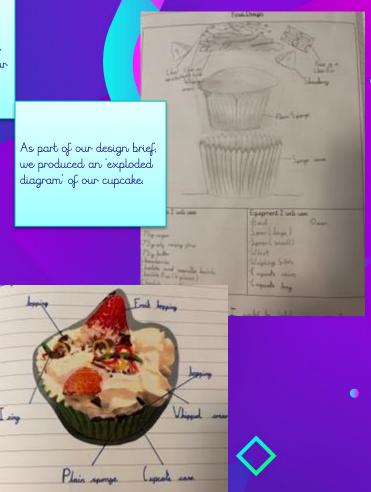
We design our cupcakes as an appealing snack that could be adapted according to preferences. We have to choose our ingredients carefully to meet our design criteria.

Year 5 Cupcakes Autumn 2



We make our cupcakes measuring our ingredients carefully and following our instructions.

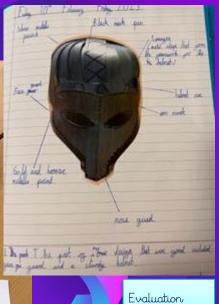


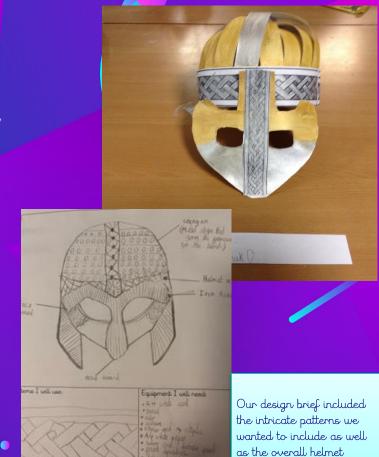




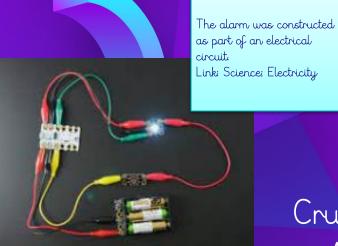
Ehsan All

Year 5 Viking Helmets Spring 1





design

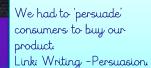


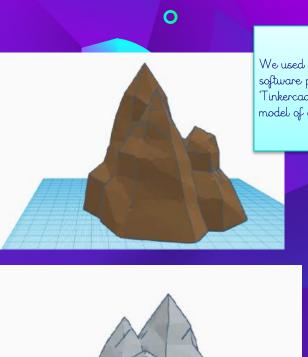
The 'Crumble' Kits allowed us to programme our alarms using computer

algorithms.

Our 'Alarm Boxes' were marketed in Dragon's Den as somewhere to keep your valuables safe from annoying siblings!

Year 6 Crumble Alarm Autumn 2





We used an online software programme called 'Tinkercad' to design a 3-D model of our volcano:



