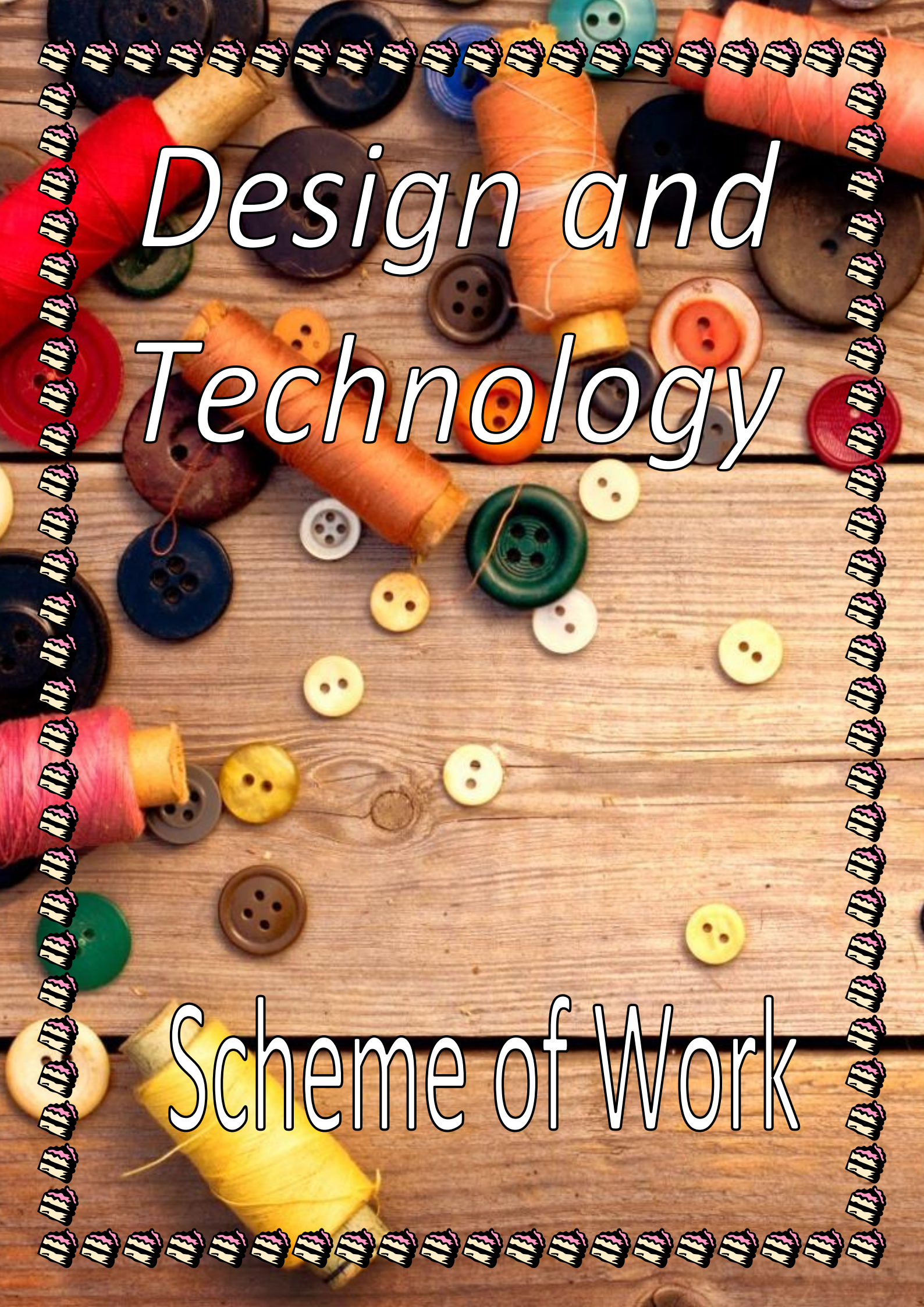




Design and Technology

Scheme of Work

Design Focus



Throughout the year there will be three Design and Technology weeks. (Usually after each half term to enable cross curricular links with either half term's topics) Each design week will have a different focus. **One** of the three D&T projects each year should be a group task.

- Food and Drink Technology
- Construction Including Structures, Mechanisms and Control Technology
- Constructing with Textiles



The Design Process

Each project, regardless of focus, can follow a simple process in design.



The design process never ends and, in theory the project should inform new designs that improve upon the made products.

Exemplar Design Project



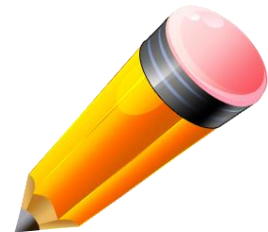
Research

- I can identify the Design Brief
- I can think about who my product will be designed for.
- I can consider the needs of the person my product will be designed for.
- I can research Existing Products
- I can evaluate Existing Products
- I know about the history of the product
- I know about designers who have designed similar products
- I can conduct relevant market research



Research / Acquire New Skills

- I can research methods of etc.
- I know health and safety rules for using new tools
- I can use new tools
- I can make test models
- I can evaluate my test model



Concepts and Design

- I can create many annotated concepts
- I can draw a technical drawing of a final design from different views and include measurements.
- I can annotate my designs



Making

- I can make my product
- I can evaluate and plan during the making process
- I can continue to evaluate and plan during the making process

Evaluation

- I can evaluate my final product
- I can evaluate my product against the Design Brief
- I can consider other people's evaluations of my product
- I can use what I have learnt to create further designs





Design and Technology National Curriculum Aims

- 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 high-quality prototypes and products for a wide range of users
- 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.



Design and Technology in the Foundation Stage

In the foundation stage (FS1&2) the children will continue to undertake rich cross curricular activities to assist in their progress working towards completion of their early learning goals. The children will also be assessed towards these learning goals.

Although the children will not be expected to undertake Design and Technology projects to the extent of KS1, they will be expected to complete extended design projects. Each project will follow the design process of

- Research
- Design
- Make
- Evaluate



These projects will take place during the school's design and technology weeks (usually the week following a half term break) The three topics covered throughout each year will be a balance of the main areas of Design and Technology including a construction project, a textile topic and a healthy food topic. The food topic will focus on the preparation of healthy food. The children will be encouraged to explore materials and tools throughout all of these projects.

Although some tasks will be verbal communication (such as evaluating) every effort will be to increase the formalities of recording each stage of work. Photographic evidence of work (or video files of verbal work) will be taken, collected and stored in the shared area.



Key Stage 1 (National Curriculum)

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment]. When designing and making, pupils should be taught to:

Design

- design purposeful, functional, appealing products for themselves and other users based on design criteria
- generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology

Make

- select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
- select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics

Evaluate

- explore and evaluate a range of existing products
- evaluate their ideas and products against design criteria Technical knowledge
- build structures, exploring how they can be made stronger, stiffer and more stable
- explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.

As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.

Cooking and Nutrition

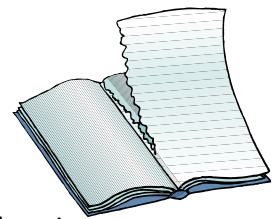
- use the basic principles of a healthy and varied diet to prepare dishes
- understand where food comes from.

In Key Stage 1 the children will...

- investigate things and say how they work, what they do and what they are made of;
- plan what to make and be able to tell someone else about it;
- make things from our plans and be able to say what has or has not worked well and why;
- work with tools and equipment safely to measure and mark, cut and shape, join and combine and decorate and finish different materials;
- learn about how to use different materials and mechanisms.

Through designing, developing, planning and communication their ideas the children will...

- Follow verbal instructions
- Explain what they are making and which materials they are using
- Name the tools they are using
- Describe what they need to do next
- Select materials from a limited range that will meet the design criteria
- Select and name the tools needed to work the materials
- Select appropriate technique explaining First.....Next.....Last....
- Explore ideas by rearranging materials
- Model ideas with kits, reclaimed materials
- Select pictures to help develop ideas
- Use pictures and words to convey what they want to design and make
- Describe their models and drawings of ideas and intentions
- Use kits/reclaimed materials to develop an idea
- Use drawings to record ideas as they are developed
- Discuss their work as it progresses
- Add notes to drawings to help explanations (begin to annotate)



Throughout all Design and Technology projects the children in Key Stage 1 will have the opportunity to develop their knowledge and understanding of basic sheet materials. The children will...

- Fold, tear and cut paper and card
- Roll paper to create tubes
- Cut along lines, straight and curved
- Curl paper
- Use hole punch
- Insert paper fasteners for card linkages
- Create hinges
- Use simple pop ups
- Investigate strengthening sheet materials





Key Stage 2 (National Curriculum)

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. When designing and making, pupils should be taught to:

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 and pattern pieces

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 structures
- understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
- understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]

As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.

Cooking and Nutrition

- understand and apply the principles of a healthy and varied diet
- prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques
- understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

In Lower Key Stage 2 the children will

- investigate and evaluate products to help generate ideas for our own work;
- make detailed plans for our ideas showing what we want to achieve and how to do it;
- use our plans to make products, evaluating and adapting our ideas as we work;
- work with tools and equipment safely and accurately to measure and mark, cut and shape, join and combine and decorate and finish different materials;
- learn about how different materials and mechanisms can be used for a purpose.

Through designing, developing, planning and communication their ideas the children will...

- Investigate similar products to the one to be made to give starting points for a design
- Draw/sketch products to help analyse and understand how products are made
- Think ahead about the order of their work and decide upon tools and materials
- Plan a sequence of actions to make a product
- Record the plan by drawing (labelled or annotated sketches) or writing
- Develop more than one design or adaptation of an initial design
- Propose realistic suggestions as to how they can achieve their design ideas
- Add notes and annotations to drawings to help explanations

Throughout all Design and Technology projects the children in Lower Key Stage 2 will have the opportunity to develop their knowledge and understanding of basic sheet materials. The children will...

- Cut slots
- Cut internal shapes
- Use lolly sticks/card to make levers and linkages
- Use linkages to make movement larger or more varied.
- Use and explore complex pop ups
- Create nets



In Upper Key Stage 2 the children will

- Investigate and evaluate products to help generate ideas for our own work;
- Make detailed plans for our ideas showing what we want to achieve and how to do it;
- Use our plans to make products, evaluating and adapting our ideas as we work;
- Work with tools and equipment safely and accurately to measure and mark, cut and shape, join and combine and decorate and finish different materials;
- Learn about how different materials and mechanisms can be used for a purpose.

Through designing, developing, planning and communication their ideas the children will...

- Investigate products/images to collect ideas
- Sketch and model alternative ideas
- Develop one idea in depth
- Combine modelling and drawing to refine ideas
- Plan the sequence of work using a storyboard
- Record ideas using well annotated diagrams
- Use models, kits and drawings to help formulate design ideas
- Make prototypes
- Use found information to inform decisions
- Use a computer to model ideas
- Draw plans which can be read/followed by someone else
- Give a report using correct technical vocabulary



Throughout all Design and Technology projects the children in Upper Key Stage 2 will have the opportunity to develop their knowledge and understanding of basic sheet materials. The children will...

- Cut slots
- Cut accurately and safely to a marked line
- Join and combine materials with temporary, fixed or moving joinings
- Use craft knife, cutting mat and safety ruler **under one to one** supervision
- Choose an appropriate sheet material for the purpose



Foundation Stage

Project: Healthy Fruit Kebabs (Preparing Fruits)

Term: Autumn Term

D&T Focus: Food

Topic Link:

Everything Grows



Research

Research where fruits are grown and how they travel to the UK. Visit the garden area at school and talk with the gardening club about how fruit and vegetables are grown. Taste a variety of healthy fruits, describe and identify them. Rate / evaluate the taste of each item with a view of including them as ingredients for their fruit kebab.

Design

Design a healthy fruit kebab



Make

Make a healthy fruit kebab. Children should learn how to prepare food safely and hygienically. The children should experience peeling, grating, chopping and slicing.

Evaluate

Evaluate the success of the food that has been prepared by tasting and rating how well each part has been prepared and how tasty the overall effect was. Children should evaluate how healthy their prepared food was.



Foundation Stage

Project: Making musical instruments inspired by other cultures.

Term: Spring Term

D&T Focus: Construction

Topic Link: A Journey Around the World



Research

Research different instruments used in cultural celebrations and daily life around the world. Explore the different ways in which sounds are made on different instruments. Experiment with making sound in different ways and explore the different instruments we have in school. The children should create a design brief to design an instrument of their choice.

Design

Design an instrument inspired by a different culture, thinking carefully about how the sound will be made and how the instrument will be decorated appropriately.

Make

Make an instrument using a variety of skills including cutting a variety of materials and joining (including gluing) a variety of materials to create a sturdy structure, with decoration adding to the effect of the design.

Evaluate

Evaluate the success of the product (instrument) by playing it in a class celebration, whilst listening to music from other cultures. Evaluate what has been done well and what could be improved.



Foundation Stage

Project: Sea Creature Sewing

Term: Summer Term

D&T Focus: Textiles

**Topic Link: Julia Donaldson story
'Sharing a Shell'**



Research

Research animals / creatures that live in the sea or ocean. Look at existing collages and sewn creatures. Ask the children to say which ones they like and why they like them. Ask the children to experiment with a variety of fabrics to create different effects for their fish and explain which fabrics would work best for the project and which ones would not. Practise simple sewing stitches and discuss safety elements involved with this.



Design

Design how to create part of a class collage (for a school display) by focussing on one chosen creature. Decide on the different parts e.g. different fabrics etc.

Make

Make the sea creature experimenting with different fabrics, cutting fabrics, exploring different textures of fabric and additions to the fabric e.g. buttons. Explore the use of glue with the fabric. Experiment with different ways of joining or sticking fabrics (and decorations) i.e. glue.

Evaluate

Evaluate the effect of the individual item saying what they like about it and how it could be improved.





Year One

Project: Chinese Noodle Boxes



Term: Autumn Term

D&T Focus: Food

Topic Link: China

- I can develop a food vocabulary using taste, smell, texture and feel
- I can group familiar food products e.g. fruit and vegetables
- I can cut, peel, grate, chop and melt a range of ingredients
- I can work safely and hygienically
- I can understand the need for a variety of foods in a diet
- I can measure and weigh food items, non-statutory measures e.g. spoons, cups and begin to use standard units of measure.
- I can say what I like and do not like about items that I have made and attempt to say why
- I can talk about my designs as they develop and identify good and bad points
- I can talk about any changes made during the making process
- I can discuss how closely my finished products meet my design criteria





Year One

Project: Pirate hats



Term: Spring Term

D&T Focus: Textiles

Topic Link: Pirates and the Ocean

- I can choose a shape for my hat
- I can choose items that can be added to my hat to decorate it and make it individual
- I can experiment with how to join decorative materials to fabric
- I can use pre-punched holes to learn how to sew using running stitch and over stitch.
- I can say what I like and do not like about items that I have made and attempt to say why
- I can talk about my designs as they develop and identify good and bad points
- I can talk about any changes made during the making process
- I can discuss how closely my finished products meet my design criteria



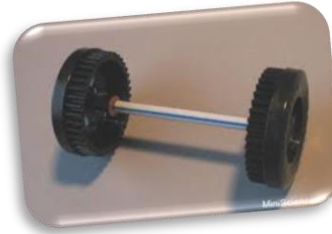
Year One

Project: Great Fire of London Fire Engines

Term: Summer Term

D&T Focus: Construction

Topic Link: Great Fire of London



- I can make vehicles with construction kits which contain free running wheels
- I can use a range of materials to create models with wheels and axles e.g. tubes, dowel, cotton reels
- I can attach wheels to a chassis using an axle
- I can join appropriately for different materials and situations e.g. glue/ tape
- I can mark out materials to be cut using a template
- I can say what I like and do not like about items that I have made and attempt to say why
- I can talk about my designs as they develop and identify good and bad points
- I can talk about any changes made during the making process
- I can discuss how closely my finished products meet my design criteria



Year Two

Project: Pneumatic Mini Beasts

Term: Autumn Term

D&T Focus: Construction

Topic Link: Mini Beasts



- I can research existing products that use pneumatic systems.
- I know how simple pneumatic mechanisms can be used to produce different types of movement
- I can investigate and comment on the effectiveness of pneumatic systems using syringes and balloons.
- I can use leverage systems with pneumatic systems to create movement.
- I know different ways that materials can be joined.
- I can explore my own ideas and designs using 3D modelling
- I can say what I like and do not like about items that I have made and attempt to say why
- I can talk about my designs as they develop and identify good and bad points
- I can talk about any changes made during the making process
- I can discuss how closely my finished products meet my design criteria



Year Two

Project: Scottish Container

Term: Spring Term

D&T Focus: Textiles

Topic Link: An Island Home



- I can colour and decorate fabrics using a range of techniques e.g. fabric paints, printing, painting
- I can cut out shapes which have been created by drawing round a template onto the fabric
- I can join fabrics by using a neat **running stitch**, glue, staples, over sewing, tape
- I can decorate fabrics with buttons, beads, sequins, braids, ribbons
- I can say what I like and do not like about items that I have made and attempt to say why
- I can talk about my designs as they develop and identify good and bad points
- I can talk about any changes made during the making process
- I can discuss how closely my finished products meet my design criteria



Year Two



Project: Safari Soup

Term: Summer Term

D&T Focus: Food

Topic Link: Safaris of the World



- I can identify and separate different types of familiar food products e.g. fruit, vegetables and bread
- I can mix a range of ingredients
- I can work safely and hygienically
- I can understand the need for a variety of foods in a diet
- I can understand the need for a healthy diet
- I can measure and weigh food items using non-statutory measures e.g. spoons, cups
- I can say what I like and do not like about food items and use this to influence my design
- I can talk about my designs as they develop and identify good and bad points
- I can talk about any changes made during the making process
- I can discuss how closely my finished products meet my design criteria
- I can say what I like and do not like about items that I have made and attempt to say why



Year Three

Project: Polar Animals

Term: Autumn Term

D&T Focus: Textiles

Topic Link: Polar Regions

- I can understand and use seam allowance
- I can use pins to temporarily hold fabric
- I can join fabrics using running stitch, over sewing and back stitch
- I can explore fastenings and recreate some e.g. sew on buttons and make loops
- I can prototype a product using a cheaper material.
- I can use appropriate decoration techniques e.g. appliqué or simple stitches
- I can identify the strengths and weaknesses of my design ideas
- I can decide which design idea to develop
- I can consider and explain how the finished product could be improved
- I can discuss how well the finished product meets the design criteria and how well it meets the needs of the user.



Year Three

Project: Tudor Houses

Term: Spring Term

D&T Focus: Construction

Topic Link: The Tudors

- I can cut thin wood/dowel using hacksaw and bench hook
- I can create a wooden shell or frame structure
- I know and can use different methods for joining wood including a butt joint and mitre joint
- I know how I can strengthen my wood joins
- I can prototype frame and shell structures
- I can measure and mark square selection, strip and dowel accordingly to 1cm
- I can use a cool melt glue gun with close supervision (one to one)
- I can identify the strengths and weaknesses of my design ideas
- I can decide which design idea to develop
- I can consider and explain how the finished product could be improved
- I can discuss how well the finished product meets the design criteria and how well it meets the needs of the user.



Year Three



Project: Design a Brand of Tea



Term: Summer Term

D&T Focus: Food & Drink

Topic Link: Climate & Coasts



- I can develop sensory vocabulary and knowledge using, smell, taste, texture and feel
- I can analyse the taste, texture, smell and appearance of a range of drinks
- I can follow instructions
- I can make healthy eating and drinking choices from and understanding of a balanced diet
- I can use a kettle, with supervision, safely
- I can join and combine a range of ingredients and comment on their success.
- I can work safely and hygienically
- I can pour, measure and weigh ingredients appropriately
- I can identify the strengths and weaknesses of my design ideas
- I can decide which design idea to develop
- I can consider and explain how the finished product could be improved
- I can discuss how well the finished product meets the design criteria and how well it meets the needs of the user.



Year Four

Project: Creating Savoury Meals Using Rations

Term: Autumn Term

D&T Focus: Food

Topic Link: World War Two

- I can develop sensory vocabulary and knowledge using, smell, taste, texture and feel

- I can analyse the taste, texture, smell and appearance of a range of foods

- I know a basic recipe

- I can follow instructions

- I can make healthy eating choices from and understanding of a balanced diet

- I know that a variety of different, and sometimes unusual, foods that were available in Britain during WW2

- I can join and combine a range of ingredients and comment on their success.

- I can work safely and hygienically

- I can measure and weigh ingredients appropriately

- I can identify the strengths and weaknesses of my design ideas

- I can decide which design idea to develop

- I can consider and explain how the finished product could be improved

- I can discuss how well the finished product meets the design criteria and how well it meets the needs of the user



Year Four

Project: Viking Purses

Term: Spring Term

D&T Focus: Textiles

Topic Link: Vikings



- I can create a textile pattern
- I can understand the need for patterns
- I can simulate my design on the computer
- I can investigate ways in using textiles to create aesthetically pleasing patterns such as cross stitch, knitting or weaving
- I can incorporate a decorative use of textiles into a product designed specifically for someone else
- I can use the design criteria to inform my decisions about ways to proceed
- I can justify my decisions about materials and methods of construction
- I can reflect on my work using design criteria stating how well the design fits the needs of the user
- I can identify what does and does not work in the product
- I can make suggestions as how my design could be improved



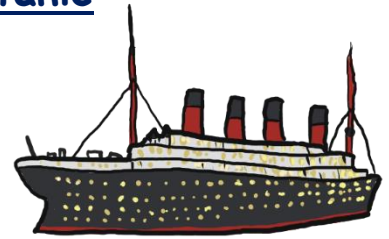
Year Four

Project: Electrical Components in the Titanic

Term: Summer Term

D&T Focus: Construction

Topic Link: Natural Disasters



- I can incorporate a circuit with a bulb or buzzer into a model
- I can create a shell or frame structure from any relevant material of choice
- I can strengthen frames or structures with diagonal struts
- I can make structures more stable by giving them a wide base
- I can prototype frame and shell structures out of a cheaper material and evaluate its success
- I can measure, mark and prepare a range of materials accurately
- I can use a cool melt glue gun with close supervision (one to one)
- I can identify the strengths and weaknesses of my design ideas
- I can decide which design idea to develop
- I can consider and explain how the finished product could be improved
- I can discuss how well the finished product meets the design criteria and how well it meets the needs of the user





Year Five

Project: Healthy Meal



Term: Autumn Term
D&T Focus: Food
Topic Link: Australia



- I can develop sensory vocabulary and knowledge using, smell, taste, texture and feel
- I can analyse the taste, texture, smell and appearance of a range of foods
- I can follow instructions
- I can make healthy eating choices from and understanding of a balanced diet
- I know that a variety of different, and sometimes unusual, foods are used all over the world
- I can join and combine a range of ingredients and comment on their success.
- I can work safely and hygienically
- I can measure and weigh ingredients appropriately
- I can identify the strengths and weaknesses of my design ideas
- I can decide which design idea to develop
- I can consider and explain how the finished product could be improved
- I can discuss how well the finished product meets the design criteria and how well it meets the needs of the user





Year Five

Project: Mountain Cable Cars

Term: Spring Term

D&T Focus: Construction

Topic Link: Mountains

- I can use a bradawl to mark hole positions (Close supervision)
- I can use hand drill to drill tight and loose fit holes
- I can cut strip wood, dowel, square section wood accurately to 1mm
- I can join materials using appropriate methods
- I can use a pulley mechanism to slow a motor
- I can build frameworks using a range of materials e.g. wood, card, corrugated plastic to support mechanisms
- I can use a cool melt glue gun with close supervision
- I can use the design criteria to inform my decisions about ways to proceed
- I can justify my decisions about materials and methods of construction
- I can reflect on my work using design criteria stating how well the design fits the needs of the user
- I can identify what does and does not work in the product.
- I can make suggestions as how my design could be improved



Year Five



Project: Mayan Headdress



Term: Summer Term

D&T Focus: Textiles

Topic Link: The Mayan Civilisation

- I can create 3D items, products or clothing using pattern pieces and seam allowance
- I can understand pattern layout
- I can decorate textiles appropriately often before joining components
- I can pin and tack fabric pieces together
- I can join fabrics using over sewing, back stitch, blanket stitch or machine stitching

(one to one supervision when using sewing machines)



- I can combine different types of fabrics
- I can make quality products
- I can use the design criteria to inform my decisions about ways to proceed
- I can justify my decisions about materials and methods of construction
- I can reflect on my work using design criteria stating how well the design fits the needs of the user
- I can identify what does and does not work in the product.
- I can make suggestions as how my design could be improved



Year Six

Project: Christmas Cakes

Term: Autumn Term

D&T Focus: Food

Topic Link: Seasonal

- I can prepare food products taking into account the properties of ingredients and sensory characteristics
- I can select and prepare foods for a particular purpose
- I can taste a range of ingredients, food items to develop a sensory food vocabulary for use when designing
- I can weigh and measure using scales
- I can cut and shape ingredients using appropriate tools and equipment
- I can join and combine food ingredients appropriately
- I can decorate appropriately and understand the aesthetical values of food
- I can work safely and hygienically
- I can show awareness of bringing a food product to market
- I can show awareness of packaging a food product ready for sale
- I can show awareness and understanding of costs of all materials and ingredients used and how this would affect the price of the product.
- I can use the design criteria to inform my decisions about ways to proceed
- I can justify my decisions about materials and methods of construction
- I can reflect on my work using design criteria stating how well the design fits the needs of the user
- I can identify what does and does not work in the product.
- I can make suggestions as how my design could be improved



Year Six

Project: Steam Boats

Term: Spring Term

D&T Focus: Construction

Topic Link: Around the World in 80 Days

- I can investigate the different ways that different vehicles move
- I can make changes to my designs to change the speed of the vehicle
- I can research steam power and incorporate this in my model
- I can use the design criteria to inform my decisions about ways to proceed
- I can justify my decisions about materials and methods of construction
- I can reflect on my work using design criteria stating how well the design fits the needs of the user

- I can identify what does and does not work in the product
- I can make suggestions as how my design could be improved



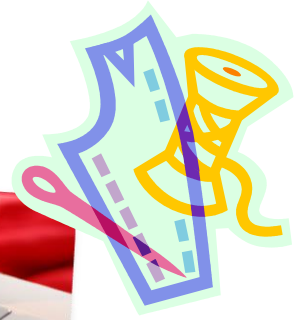
Year Six

Project: Human Rights Textiles

Term: Summer Term

D&T Focus: Textiles

Topic Link: Human Rights Activists



- I can create 3D items, products or clothing using pattern pieces and seam allowance
- I can understand pattern layout
- I can decorate textiles appropriately often before joining components
- I can pin and tack fabric pieces together
- I can join fabrics using over sewing, back stitch, blanket stitch or machine stitching

(one to one supervision when using sewing machines)

- I can combine different types of fabrics
- I can make quality products
- I can use the design criteria to inform my decisions about ways to proceed
- I can justify my decisions about materials and methods of construction
- I can reflect on my work using design criteria stating how well the design fits the needs of the user
- I can identify what does and does not work in the product
- I can make suggestions as how my design could be improved

