Design and Technology

Intent:

At Linby cum Papplewick C of E Primary School, our desire is for every child to be able to take risks, become resourceful, innovative and enterprising; to use creative thinking and design within a defined purpose. Through a variety of creative and practical activities at Linby cum Papplewick C of E Primary School, children will be taught the knowledge, understanding and skills needed to engage in a process of designing and making. Children will work in a range of contexts through our topic-based approach, which allows for cross curricular links to be made.

Our children develop their skills through collaborative working and problem-solving, following the plan-do-review process. As they implement their design plans, we encourage them to apply their growing knowledge of materials, components, mechanisms, structures and health and safety to create quality products.

Our lesson delivery follows a clear structure of the design process looking at the design and development process, how this design can then be implemented effectively with careful consideration of the tools and skills needed to complete the making of the product balanced with careful evaluation throughout .

At Linby, we provide a variety of opportunities for design and technology learning to take place. In design and technology, children will be challenged to solve problems and develop their learning independently. This allows the children to have ownership over their curriculum and lead their own learning in this subject. They will be encouraged to fully explore the design process, evaluating their work at each stage to ensure that it is of the highest possible quality.

Clear and appropriate cross curricular links to underpin learning in multi areas across the curriculum have been made to give the children opportunities to learn life skills and apply skills to 'hands on' situations in a purposeful context.

Hebrews 3:4

For every house is built by someone, but God is the builder of everything.

Aims:

Key objectives based on the National Curriculum 2014 guidance:

- Make products for a purpose.
- Children's design and construction of products should be individual.
- Children will be able to make on-going changes and improvements during making stages.
- Children will look into seasonality of ingredients and how they are grown, caught or reared.
- Children will research key events and individual designers in KS2.

Christian Values

Our School Values are dignity, community, hope, wisdom and love. We gain a heart of wisdom in every lesson, in every day. Through Design and Technology, children are able to express their creativity and talents through different approaches and opportunities. Christians believe that life is a gift entrusted by a loving creator God to humankind for a purpose and this purpose is seen as the creative spirit within each person. At Linby cum Papplewick C of E Primary School, we aim to explore, celebrate and enjoy the world in all its mystery and diversity. Through studying a wide range of designers from different cultures and backgrounds, children can begin to appreciate different perspectives.

Implement:

The acquisition of knowledge and development of technical skills is an integral part of our design and technology lessons. Linked knowledge organisers, which include diagrams and key vocabulary, enable pupils to learn and retain the important, useful and powerful vocabulary and knowledge contained within each unit.

At Linby cum Papplewick C of E Primary, teachers create a positive attitude to design and technology learning within their classrooms and reinforce an expectation that all pupils are capable of achieving high standards.

Our whole school approach to the teaching and learning of design and technology involves the following:

Our Design and Technology lessons are taught over a number of weeks to allow children to acquire a wealth of substantive knowledge as well as learning and embracing unique skills. Our curriculum is progressive. We build upon the learning and skill development of the previous years, which is tested through our 'start of unit quizzes' where teachers can identify misconceptions that need addressing.

New vocabulary and challenging ideas are introduced through direct teaching. This is developed through the years, in keeping with the topics.

EYFS:

Design and Technology in the foundation stage is addressed through free-flow learning and exploring the world. EYFS teachers will encourage children to explore designing and making materials. Pupils in foundation stage are encouraged to use and discover a variety of tools safely and explore their creativity through continuous provision and showcasing their imaginations through a plan, do, review cycle.

Assessment and Recording of Learning:

Assessment in design and technology is carried out by teachers through a variety of formative and summative methods. Start of unit quizzes allow teachers to identify misconceptions prior to the lesson input. End of unit quizzes allow teachers to assess pupil's progress and attainment in computing. Knowledge organisers are used during every design and technology lessons to aid knowledge retention.

Learning in design and technology is recorded in using the back of Sketch books. These progress through the school with each child, as a personal journey of their design and technology progress.

Impact:

The successful approach to the teaching of design and technology at Linby cum Papplewick Primary results in a fun, engaging, high quality education, that provides pupils with the foundations for understanding how every child is a creative learner and that each of us can express that creativity in unique ways.

As in the biblical verse, 'Start children off the way the way they should go', we provide children with a range of experiences and opportunities which gives them the confidence and belief to do their best and believe anything is possible for them through their God given gifts and talent. This helps all to flourish and embrace the opportunities beyond school.

Pupil voice and work looks are used to further develop the design and technology curriculum, through questioning of pupils' views and attitudes towards design and technology, to assess the children's enjoyment of design and technology and to motivate learners.

Key Concepts in Design and Technology

The key concepts in Design and Technology are:

Inspiration

Experiment

Expression.

Inspiration:

Through inspiration we consider a stimulus and look at designers. Our curriculum aims to look at designers from different cultures, backgrounds and genders.

Experiment:

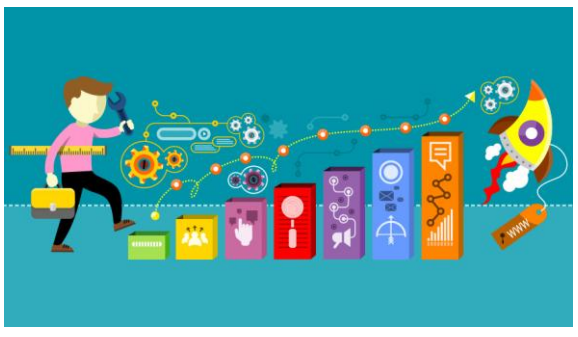
As a part of the experiment stage, we investigate and hone different skills. We consider different ways in which we can join materials together. We look at mechanical processes and electronics. We consider seasonal food and ways of chopping, cutting, slicing and mixing foods to make healthy meals.

Expression:

When considering Expression, we consider the plans and the outcome of our designs and evaluate whether the products we have made are fit for the purpose that we designed them for.

Inspiration

Experiment



Expression

Design and Technology: Mapping of Units of Study

Year A			
Class	**Autumn**	**Spring**	**Summer**
Ash (R)	**Textiles:** Fabric faces and sock puppets	**Freestanding structures:** Houses and towers	**Food technology:** Design and make a pita pizza
Elm (Y1, Y2)	**Mechanical systems:** Cards, sliders and levers	**Mechanical systems:** Axels and wheels or paper aeroplane	**Textiles:** Puppets using a template
Fir (Y3, Y4)	**Mechanical systems** Mining lift – pulleys	**Structures:** Roman shield	**Textiles:** Make an Egyptian collar
Oak (Y5, Y6)	**Freestanding structures:** Bridges (Beam)	**Mechanical systems:** Design and create a moving space vehicle	**Textiles:** Design and make waistcoats.

Year B			
Class	**Autumn**	**Spring**	**Summer**
Ash (R)	**Food technology:** Baking bread, making sandwiches	**Freestanding structures:** Designing and making a rocket of different sizes	**Mechanical systems**: Designing and making different modes of transport
Elm (Y1, Y2)	**Food technology:** Food for Grandma	**Freestanding structures:** Playground equipment	**Freestanding structures:** Furniture
Fir (Y3, Y4)	**Electrical systems:** Design and make a light-up Christmas decoration	**Food technology:** Maya / Mexican cuisine	**Structure:** Design and make a minotaur maze game.
Oak (Y5, Y6)	**Food technology:** Design and make a meal from rations	**Frame structure:** Design and build a Tudor Style House	**Electronics:** Design and make a working lighthouse

Design and Technology Inspiration (stimulus and designers)

UKS2

Year 6

I can analyse the work of professionals to develop and broaden my understanding of the process of design and production.

I know that stone bridges were used before developments in other materials and that longer bridges were able to be made once the newer materials were used.

I know that and recognise and appreciate developments in design technology impacted on individuals, society and the environment.

Year 5

I am beginning to analyse the work of professionals to develop and broaden my understanding of the process of design and production.

I know that developments in design technology impacted on individuals, society and the environment.

Vocabulary:

Isambard Brunel, Ministry of Food, Robert Stevenson

LKS2

Year 4

I know how a designer's background can have an impact on the mechanisms, structures and products created.

I know the symbolism behind different colours, shapes and pictures on an Egyptian collar.

I know how and why historical beliefs at the time were used to inspire designs.

I know that recipes can be adapted to personal taste and availability of food.

Year 3

I know that a design can be created in response to a problem or issue (mining headstock, lighting the dark nights).

I know that colour, shapes and pictures were used to create different patterns on Egyptian collars.

I know that historical beliefs at the time were used to inspire designs.

I know that the local environment can provide the ingredients for regional recipes.

Vocabulary:

George Stephenson, John King (mining), The Hairy Bikers

KS1

Year 2

I know that different characteristics (shape, texture, hardness and taste) of food can help to create an interesting fruit salad for a certain consumer.

I know how sliders and levers can be used in a range of birthday cards and books with moving parts.

I know that a bridge is used to span something that is difficult to cross (a road, a canyon or a river).

I know and understand how I can create a moving vehicle using wheels and axels.

I know that the work of some designers is instantly recognisable.

Year 1

I know that different characteristics (shape, texture, hardness and taste) of food can help to create an interesting fruit salad.

I know that sliders and levers can be used in a range of birthday cards and books with moving parts.

I know that people create beam bridges to span something that is difficult to cross.

I know that a wheel and axel are used to create a turning motion.

I know that designers can produce similar products using different design features.

Vocabulary:

Hugh Fearnley-Whittinghstall, Charles and Ray Eames, Lin Yuanpei, consumer

EYFS

EYFS

I know how to use characters from stories to inspire my designs.

I know famous landmarks can inspire my own designs.

I know different modes of transports can be used in my own designs.

I can choose ingredients that I like to make my own food.

Vocabulary:

Georgia Hill (UK puppet designer), Eiffel Tower, boat, car, rocket, aeroplanes

Design and Technology Experiment (skills)

UKS2

Year 6

I know how to use and combine a variety of approaches to generate creative ideas.

I can explore the benefits, strengths and weaknesses of different wood joins

I know how to strengthen structures by manipulating materials and shapes.

I know how to accurately cut, fold and assemble a net.

I know combinations of food that will complement one another.

I know how to use different decorative stitches with accurate and even spacing.

I know how to use a bench hook and saw safely and effectively to create a range of structures.

I know how to make electromagnetic motors.

know how to make components and assemble them in order to make a stable frame.

Year 5

I know how to reinforce a structure, including using triangles.

I know how to accurately follow a plan.

I know how to use a saw safely.

I know how to create a strong beam and different types of bridges: identifying truss, span, arch and beam bridges.

I know how to adapt a recipe to make it healthier.

I know how to apply a variety of stitches to join fabric, leaving an even and regular space between them.

I know how to make a working circuit.

I know how to make mechanisms and/or structures using sliders, pivots and folds to produce movement.

Vocabulary:

frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join temporary, permanent, seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces, name of textiles and fastenings used, pins, needles, thread, pinking shears, fastenings, pulley, drive belt, gear, rotation, spindle, river, follower, ratio, transmit, axle, motor, circuit, switch, circuit diagram, annotated drawings, exploded diagrams, mechanical system, electrical system, input, process, output, light emitting diode (LED), bulb, bulb holder, battery, battery holder, USB cable wire, insulator, conductor, crocodile clip, control, program, system, input device, output device, series circuit, parallel circuit

LKS2

Year 4

I know how to reinforce corners to strengthen a structure.

I know the advantages and disadvantages of different fastenings.

I know how to select a stich to join a fabric.

I know how to make an electrical object using an electrical switch and circuit.

Year 3

I know how to prepare a workspace to cook safely

I know how to join a fabric using a cross stitch.

I know how to select suitable materials for a construction, e.g. considering weight, compression and tension.

I know how to design an electrical circuit safely.

Vocabulary:

cams, gears, pulleys, levers and linkages,

strength, stiffen, reinforce

measure, mark, cut, stitch, zipper, button, Velcro, press stud

series circuit, lamp, motor, cell battery, switch

import, export, fry, grate, slice, chop, soften, mix, season, measure

KS1

Year 2

I know that a frame structure is made of thin poles joined together.

I know that triangles are strong shape.

I know how to chop and prepare fruit and vegetables safely (knife safety, bridge and claw grips).

I know that a mechanism is where materials or components are connected to make movement.

I know how to create a pattern piece when working with fabric.

Year 1

I know that a pattern of staggered joints makes a wall strong.

I know how to make cylinders and join them to a base using a flange joint.

I know how to chop some fruit and vegetables safely (knife safety).

I know that a lever moves around a pivot in a curved motion.

I know that sliders move side-to-side or up and down.

I know that we need to choose suitable material for the correct purpose.

I know that there are different techniques for joining fabrics (sewing, stapling, gluing, pinning).

Vocabulary:

axel, wheel, movement, sliders, rotation

peel, slice, squeeze , de-seed, combine

assemble, join, fix

pattern,

EYFS

EYFS

I know how to use a range of tools for cutting, shaping, joining and finishing to make own products.

I can name a variety of tools (scissors, hammer, vice, hole punch).

I know how to use a range of age-appropriate constructions kits.

I know how to use hygienic practices when working with food ingredients.

I know how to follow simple pictorial recipes and combine ingredients, under adult supervision, creating food products and other media i.e. playdough.

Vocabulary:

cutting, shaping, safe, joining, gluing holding

kneading, mixing, stretching

Design and Technology Expression (Outcome / Evaluate)

UKS2

Year 6

I know how to design innovative, functional products that are fit for purpose and aimed at a specific audience.
I know how to design independently, thinking about the tools to use and how to produce a step-by-step process.
I know how to follow and refine my original plans.
I know how to test and evaluate designed products
I know how to improve a design plan based on peer evaluation
I know how to test and adapt a design to improve it as it is developed
I know how to identify what makes a successful structure.
I know how to action and apply points of improvement.
I know what changes I would make/do if I were to do the project again.

Year 5

I know how to produce a detailed, step-by-step plan.
I know how to evaluate the work of others against a set design criteria (aesthetic and functions) and receive feedback on own work
I know how to adapt and improve structures by identifying points of weakness and reinforcing them as necessary.
I know how to suggest points for improvement for my product and those designed by others.

Vocabulary:

function, innovative, design specification, design brief, user, purpose, design brief, design specification, prototype, annotated sketch purpose, user, innovation, research, functional, mock-up, prototype, usability

LKS2

Year 4

I know how to describe what characteristics of a design and construction make it most effective.
I know how to test and evaluate an end product against the original design criteria.
I know how many criteria should be met for the product to be considered successful.
I evaluate the final product based on the effect of shape and accuracy of workmanship on performance.
I know what makes a design effective and ineffective.

Year 3

I know how to evaluate an end product and think of other ways in which to create similar items.
I know how to use the views of others to improve designs.
I know how to test and modify the outcome, suggesting improvements.
I know how to evaluate my work and the work of others based on the aesthetic of the finished product and in.
I can make comparisons to my original design.
I know how to suggest points for modification of individual designs.

Vocabulary:

improve, effectiveness, feature, decoration,

design, evaluate, bitter, sweet , taste, flavour, safety

KS1

Year 2

I know how to test and adapt a design.
I know how to identify aspects of their peers' work that they particularly like and why.
I know how to test the strength of own structures and identify the weakest part of a structure.
I know how to evaluate the strength, stiffness and stability of own structure.
I know how to evaluate own designs against design criteria, identifying ways to develop it further
I can reflect on peer feedback to modify final design.

Year 1

I can identify strengths and possible changes to my own product and those made by others.
I know how to review work against a set brief.
I know how to evaluate according to the design criteria, testing whether the structure is strong and stable.
I know how to test mechanisms, identifying what stops wheels from turning, knowing that a wheel needs an axle to move.

Vocabulary:

Like, dislike, template, evaluate, design, test

EYFS

EYFS

I know how to explain how my product works.
I can ask questions to evaluate what others have made.
I can notice and talk about what is good about someone else's design.
I know how to articulate why they have chosen certain materials when designing and making a products.

Vocabulary:

evaluate, test, choose, improve, like, dislike, tasty, healthy, stable, strong, weak