Design and Technology
at Malin Bridge

'Design and Technology is exploring, designing and making products to solve problems using a range of materials, tools and technology.'

AT MALIN BRIDGE PRIMARY OUR PUPILS...

Malin Bridge children **celebrate diversity**

Malin Bridge children **are aspirational**

Malin Bridge children **enquire about the WORLD**

Design and Technology is finding out how things work and designing and making things.

Vision

Our vision for design and technology is to inspire pupils to be innovative and creative thinkers who have an appreciation for the product design cycle through ideation, creation and evaluation. We want pupils to develop the confidence to take risks, through drafting design concepts, modelling and testing, and to be reflective learners who evaluate their works and the work of others. *Good is not enough if it can be better and better is not enough if it can be best.*

Intent

For pupils to develop the skills and knowledge to be able to **design and make high quality products** for a purpose.

To develop **technical and practical expertise** to succeed in the technological world and life beyond Malin Bridge.

To develop skills to **investigate, research and evaluate** technological products.

Develop essential practical **life skills** to learn how to **cook**.

Know about great designers, makers, architects, engineers and **chefs**, and the impact they had on the world.

Design and Technology Concepts

The Design and Technology curriculum focusses around these six **key concepts.**

These concepts have been carefully selected to ensure pupils not only retain essential facts but are able to understand and develop the practical skills needed to engage in the process of **designing and making through building, refining and improving their work**. These concepts also provide pupils with opportunities to **discuss, critique and evaluate** their own others' work .

Design	**Make**	**Evaluate**
Technical Knowledge	**Diversity**	**Quality & Value**

Pupils develop their understanding of these concepts through meaningful examples and repeated exposure in a range of contexts from EYFS to Y6, including the integrated resource. The 3D approach of the curriculum design ensures these concepts are revisited and built upon across other subjects areas in particular through *Science, Computing, Art and Design and Mathematics.* Over time pupils schemata will grow to develop a complex and rich understanding of these concepts.

*See the **Curriculum Booklet** for more information about the 3D curriculum.*
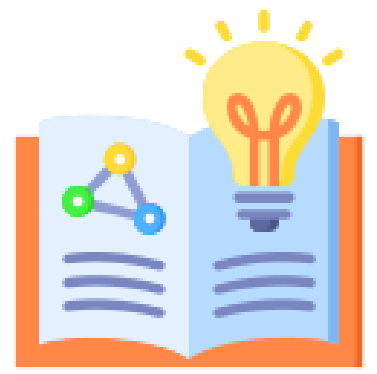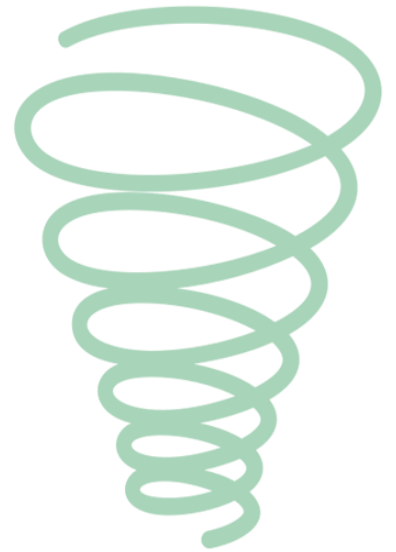
Knowledge in Design and Technology

Knowledge in DT is separated into two knowledge types: **substantive** knowledge and **disciplinary** knowledge. Within the DT curriculum, both, substantive and disciplinary knowledge are intentionally deployed in combination with each other to ensure pupils not only know the *what* but also know the *how* and *why*. Disciplinary knowledge addresses the fundamental nature of DT as a discipline as well as exploring, investigating and evaluating the quality and value of existing products. Substantive knowledge is further divided into two categories: **theoretical** and **practical.** Substantive knowledge details the precise *theoretical* information (about the design, make and evaluate process) pupils need in order for them to apply their knowledge *practically* to make something for someone for a purpose.

Design and Technology Curriculum

Substantive Knowledge

Disciplinary Knowledge

Knowledge about Design and Technology as a discipline which addresses the fundamental nature of Design and Technology.

The purpose and role of the development of technologies. *Why people develop technologies?* The worth and impact of technologies within the wider world. Exploring, researching and evaluating the **quality and value** of existing technologies including notable technologists, analysing functionality , purpose and techniques.

Theoretical

Theoretical knowledge of the Design, Make and Evaluate process including technical knowledge.

Technical knowledge of properties of materials and technological designs. The purpose and role of the **design**, aesthetics; the needs and wants of a consumer and design briefs. How to **make** something and how it is constructed, assembled and finished. The process of **evaluation** to reflect and improve products.

Practical

Practical knowledge and skills application of the Design, Make and Evaluate process.

Design: exploded diagrams, prototypes, annotated sketches, design criteria **Make:** joining, cutting, finishing, **Evaluate:** analyse and feedback successfulness considering functionality, purpose, techniques and skills application.

The breadth, depth and progression of Design and Technology at Malin Bridge has been captured within the *DT Subject Story.* This document details how the chosen DT units of study, ensure all pupils develop a comprehensive understanding of the concepts of DT to be able to explain the made world around them, how things work and design and make functional products for a purpose.

DESIGN TECHNOLOGY AT MALIN BRIDGE

By the end of studying Design Technology at Malin Bridge, children will be able to answer questions such as:

◇ Using a **diverse** range of inventors, designers, engineers, chefs, architects and manufacturers, what is the significance of their work?
◇ What do you need to consider at the **design** stage of a project?
◇ What do you need to consider at the **make** stage of a project?
◇ Why is the **evaluate** stage of a project important? Using examples, what impact does evaluation have on the final outcome?
◇ What do you need to consider when **cooking**?

Key Concepts	Associated vocabulary
Diversity	inventor, engineer, chef, manufacturers, maker, architect, designer, ethnicity, religion, sexuality, age, gender, class, able-bodied, disabled, local, national, international, culture
Design	creativity, contexts, users, purpose, generating, modelling, communicating, resourceful, innovative, iterative process, functionality, decisions, risk-taking, original, change and continuity, past, present
Make	aesthetic, plan, order, construct, attach, combine, assemble, join, embellish, refine
Evaluate	impact, critique, test, scrutinise, perspective, improvements, changes, analysing, fit for purpose
Cooking and Nutrition	cutting, peeling, grating, chopping, slicing, mixing, spreading, kneading, baking, seasonal produce, food miles, processed, ingredients, contamination, food hygiene, safety

CURRICULUM CYCLE
KS1

YEAR B	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
KS1 Skills Sheets	PETS Topic Story	MYTHICAL CREATURES Topic Story	GREAT FIRE OF LONDON Topic Story	THE BRILLIANCE OF BREAD Topic Story	WEATHER Topic Story	ANCIENT GREECE Teacher CPD Topic Story
Primary Focus	Art (Sculpture/collage)	Design Technology	History	Design Technology (Food)	Geography	Humanities
Secondary Focus			Geography	History	Science	Art (collage - mosaic)
English Links	My Elephant The hungry caterpillar Pet Poetry Room on the broom	Police Report/Wanted Poster Snow Dragon	Diary News Report	Instructions - Bread	Y1— Tree Seasons Y2— book Study Rapunzel	Theseus and the Minotaur - Narrative & Instructions
Science Subject Story & Glossary		Lifecycles	Materials	Forces - Friction	Health Food	Solids, Liquids, Gases - Weather	Plants
Religious Education Subject Story & Glossary	Christianity: Jesus as a friend Was it always easy for Jesus to show friendship? Discovery RE	Christianity: Christmas Why do Christians believe God gave Jesus to the world? Discovery RE	Christianity: Jesus's Teachings Is it possible to be kind to everyone all of the time? Discovery RE	Christianity: Easter How important is it to Christians that Jesus came back to life after his crucifixion? Discovery RE	Judaism: The Covenant How special is the relationship Jews have with God? Discovery RE	Judaism: Rites of Passage What is the best way for a Jew to show commitment to God? Discovery RE
Physical Education Subject Story & Glossary Fitness Games	Walking & Running	Hopping, Jumping, Landing and Skipping	Balance - Gymnastics	Throwing and Catching	Athletics Bike Skills	Multiskills
Computing	Year 1 - None Year 2 - What is a computer? (1,1,5) Algorithms and debugging (1,2,4,5)	Year 1 - Improving Mouse Skills (1-5) Algorithms unplugged (1,2,4,5) Year 2 - None	Year 1 - None Year 2 - Data Handling (1,1,5) Programming 2: ScratchJr (1,2,4,5)	Year 1 - Creating Media (1,2,3) Programming Beebots (1,3,4,5) Year 2 - None	Year 1 - None Year 2 - Creating Media: Shop Motion (All sessions)	Year 1 - Skills Showcase Rocket to the Moon (All sessions) Year 2 - None
Music				Nursery Rhymes and Europe B		Around the World B
Citizenship Sheffield Citizenship Skill	Belonging and Identity Families B Fa4	Diversity and Inclusion Community C2	Health and Wellbeing Staying Healthy P1, P2, P3	Belonging and Identity Conflict Resolution Fr2	The Online World Fake News and Bias Dv4	Belonging and Identity Identifiers I43, C3
Online safety Sheffield Online safety Skill		Antiracism lesson 5		Antiracism lesson 6	Antiracism lesson 7	Antiracism lesson 8
		C2 - What is the internet?			NU3 - Scary News C3 - Accepting Messages	

Breadth and Depth

All units across the curriculum ensure pupils explore DT through the repeated exposure of the key concepts: *Diversity; Design; Make; Evaluate; Technical Knowledge; and Quality and Value* through 6 areas of study:

Mechanism; Structures; Cooking and Nutrition; Textiles; Digital World and Electrical systems.

Not all of these areas of study are exclusively taught within a Design and Technology lessons. DT has strong links with other curriculum subjects and where appropriate and beneficial to the learning , aspects of these units are taught and consolidated through other subjects areas such as Science and Computing. *(Please see curriculum cycle for more information.)*

The careful selection of which DT units will be taught where and when develops pupils **generative knowledge** enabling them to **learn more, do more and remember more**. Each unit acts as a building block to ensure the knowledge and concepts learned directly build on previous units and lay the foundations for what pupils will go on to learn both within Malin Bridge and KS3. All DT units are aligned with the National Curriculum and therefore enable children to meet the end of key stage attainment targets.

Skills Sheets

There are skills sheets for each foundation subject, for each phase, detailing the key **disciplinary** knowledge and **practical** knowledge. These include what a child who is attaining typically, should **be able to do by the end of their phase**. They also include the key vocabulary which children should be able to use.

KS1 TECHNOLOGIST

Over KS1, children's learning in Design Technology should include the following:
- Researching products and improve designs through evaluation and feedback.
- Taking risks, becoming resourceful, innovative, enterprising and capable citizens.
- Applying the principles of nutrition and healthy eating through cooking and food preparation.

BY THE END OF KS1, A CHILD ATTAINING TYPICALLY WILL BE ABLE TO:

Design : Design 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, software design.

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.
Build structures, exploring how they can be made stronger, stiffer and more stable.

Evaluate : Explore and evaluate how existing products have been created, expressing own views. Evaluate their ideas and products against design criteria.

Cooking and Nutrition : Use the basic principles of a healthy and varied diet to prepare dishes. Understand where food comes from.

BY THE END OF KS1, A CHILD ATTAINING TYPICALLY WILL BE ABLE TO UNDERSTAND AND USE THE FOLLOWING VOCABULARY:

DESIGN   EVALUATE   TEMPLATE   INGREDIENTS   EXPLORE   MATERIALS

LKS2 TECHNOLOGIST

Over LKS2, children's learning in design technology should include the following:
- Researching products and improve designs through evaluation and feedback.
- Taking risks, becoming resourceful, innovative, enterprising and capable citizens.
- Applying the principles of nutrition and healthy eating through cooking and food preparation.

BY THE END OF LKS2, A CHILD ATTAINING TYPICALLY WILL BE ABLE TO:

Design : Use research to develop design criteria that leads to a product that is fit for purpose and aimed at particular individuals or groups.
Generate, develop, model and communicate their ideas through discussion, annotated sketches, use of software, prototypes and pattern pieces.

Make : Select appropriate tools and equipment to cut, shape, join and finish.
Select appropriate materials and components, including textiles and ingredients based on their aesthetic and functional properties.

Evaluate : Make refinements to a product and take it through stages of prototypes.

Cooking and Nutrition : Understand and apply the principles of a healthy and varied diet.
Using a range of cooking techniques, prepare and cook a variety of savoury dishes.
Know where and how a variety of ingredients are grown, reared, caught and processed.

BY THE END OF LKS2, A CHILD ATTAINING TYPICALLY WILL BE ABLE TO UNDERSTAND AND USE THE FOLLOWING VOCABULARY:

SKETCHES   TEXTILES   DIAGRAM   PROTOTYPE   EVALUATION   INNOVATION

AESTHETIC   EMBELLISH   TAPESTRY   EMBROIDERY   APPLIQUE   DESIGN CRITERIA

UKS2 TECHNOLOGIST

Over UKS2, children's learning in design technology should include the following:
- Researching products and improve designs through evaluation and feedback.
- Taking risks, becoming resourceful, innovative, enterprising and capable citizens.
- Applying the principles of nutrition and healthy eating through cooking and food preparation.

BY THE END OF UKS2, A CHILD ATTAINING TYPICALLY WILL BE ABLE TO:

Design : Use research to develop design criteria that leads to a product that is fit for purpose and aimed at particular individuals or groups.
Generate, develop, model and communicate their ideas through discussion, annotated sketches, use of software cross-sectional and exploded diagrams, prototypes and pattern pieces.

Make : Select appropriate tools and equipment to accurately cut, shape, join and finish.
Select appropriate materials and components, including textiles and ingredients based on their aesthetic and functional properties.

Evaluate : Make refinements to a product and take it through stages of prototypes.

Cooking and Nutrition : Understand and apply the principles of a healthy and varied diet
Using a range of cooking techniques, prepare and cook a variety of savoury dishes.
Know where and how a variety of ingredients are grown, reared, caught and processed considering seasonality.

BY THE END OF UKS2, A CHILD ATTAINING TYPICALLY WILL BE ABLE TO UNDERSTAND AND USE THE FOLLOWING VOCABULARY:

SKETCHES   TEXTILES   DIAGRAM   PROTOTYPE   EVALUATION   INNOVATION

AESTHETIC   EMBELLISH   TAPESTRY   EMBROIDERY   APPLIQUE   DESIGN CRITERIA

Knowledge Sheets

Each unit taught has a corresponding knowledge sheet which details the precise **theoretical knowledge** that pupils will be taught. This provides consistency across all classes, so all children are exposed to the same knowledge. The knowledge listed is not all for memorisation; rather, it provides a context to support children in developing skills and **practical** knowledge.

These documents also detail the prior knowledge children need to have in order to assimilate new knowledge into existing schema.

SEWING BEE
LKS2 Knowledge

AS PART OF THE HUMANITIES ASPECTS, CHILDREN WILL KNOW:

The Battle of Hastings
- The Battle of Hastings took place on the 14th October 1066.
- The battle was fought between William of Normandy and King Harold (Godwinson).
- William of Normandy was also known as William the Conqueror.
- The battle was fought because William of Normandy thought he was the rightful King of England.
- Hastings is an the south east coast of England, in the county of Sussex.
- The Normans got to Hastings by boat across the English Channel.
- The battle was fought on a hill! The English army started the battle at the top of the hill and the Normans started at the bottom.
- The English were totally outnumbered. The Normans made a winning move when they pretended to retreat. Some Saxons followed them allowing the remaining Norman soldiers to attack the weak points left in the shield wall.
- The English lost the battle and King Harold was killed. On Christmas Day 1066, William of Normandy was crowned King of England.
- Soldiers were made up of house carts and trained knights.
- The Norman army would have used a cavalry and
- The English Saxon army had horses to carry tho
- Weapons included the battle axe, mace, bow and guard and chain mail armour.

The Bayeux Tapestry
- The Bayeux Tapestry tells the story of the Norma
- It is an artefact which shows the armour and w
- The Bayeux Tapestry is actually an embroidery
- A motif is a decorative image or design.
- Embroidery is the craft of decorating fabric or a
- The Bayeux Tapestry is made up of around 55 s
- We can say it would have been embroidered by w women in early medieval England embroidered.
- Women in Anglo-Saxon England were famed for th
- The Bayeux Tapestry was embroidered onto eight

EMBROIDERY / MOTIF / CRITERIA / EVALUATION / TEMPLATE / PROTOTYPE / EMBELLISHMENTS / PRODUCT / TARGET AUDIENCE

PRE-ASSESSMENT IDEAS
- ☑ Design criteria is needed to design a successful product for a particular purpose.
- ☑ Sequencing, correct tools and appropriate materials are vital to making a successful product
- ☑ Product testing is used to evaluate how successful a product is
- ☑ Product testing shows which areas of the product work well and which need to be improved.

CONCEPT QUESTIONS
- ☑ What were the causes of the Norman invasion?
- ☑ What changes occurred in Britain as a result of the Battle of Hastings?
- ☑ How has the Bayeux Tapestry influenced the events of the Battle of Hastings?

FURTHER READING
https://www.bbc.co.uk/bitesize/clips/zmc9wmn

Historical Association - The Strange Death of King Harold II
W:\StaffShare\Curriculum\Curriculum Documents\Curriculum 3.0\LKS2\Year A\Teacher CPD

Quality and Value

Through research and exploration of past and present technologies, including key events and individuals in Design and Technology, pupils will develop a critical understanding of the purpose of technologies; their worth and their impact within the wider world and on daily life.

Within the evaluation process, pupils will use the following questions to critically analyse and form judgments and opinions about products, technologists including their own product designs.

AESTHETICS	What does the product look like? (colour, texture, patterns, decoration) What do you like or dislike about the product?
FUNCTION	What is the function of the product? How well does it work? How innovative is it?
MATERIALS	What materials and components have been used to make it? Why have these materials and components been used?
USER	How well does the product meet the needs and wants of the user?
ENVIRONMENT	Is the product sustainable or environmentally friendly? Can it be recycled or easily repaired?
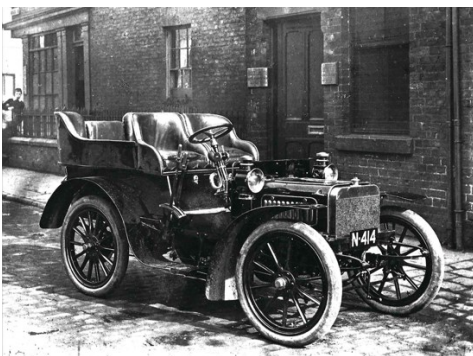
Design and Technology in the Early Years

Pupils in FS1 (Nursery) and FS2 (Reception) participate in Design and Technology through a combination of teacher-led activities as well as activities and experiences provided through continuous provision . The continuous provision provides opportunities to reinforce their knowledge through exploration and meaningful play to support the Early Learning Goals; Physical Development, Knowledge and Understanding of the World and Expressive Art and Design. Early Years children will develop fine motor skills using a range of small tools and equipment; describe and observe the technological world around them and explore a range of materials, tools and techniques sharing their ideas and creations. The Design and Technology aspects and knowledge to be taught within each topic is outlined with the knowledge sheets and continuous provision documentation.

Adaptations for SEND

We are deeply committed to providing an inclusive education that caters to the diverse needs of all our students, including those with Special Educational Needs and Disabilities (SEND). Our Design and Technology curriculum is thoughtfully adapted to ensure that SEND pupils receive the support and accommodations necessary to thrive academically and personally. Teachers know that technical terms and language in Design and Technology lessons can create barriers for pupils. Vocabulary is therefore taught explicitly at the start of new topics and pre-teaching of new vocabulary happens where needed. Teachers use knowledge organisers and glossaries for support with new vocabulary. Dual coding, communication in print, visual prompts and diagrams are incorporated within lessons to scaffolding design and making processes. Teachers provide pictorial and verbal opportunities to support evaluation of work and practical skills so pupils are clear. Teachers also ensure that all pupils, and especially those with SEND, have appropriate thinking time in order to respond in class discussions and debates. This approach is particularly helpful in increasing participation and build self-confidence.

See the **SEND** booklet for more information.

Diversity & Anti-racism Education

The diversity school driver, along with the latest research in anti-racism education, underpins the Design and Technology curriculum from FS1 to Y6. The DT curriculum ensures that units delivered to pupils include a **diverse range of voices** and **perspectives**. Resources and texts represent a wide range of **cultures, races**, and **backgrounds**.

All staff working with pupils have attended anti-racism training to reflect on their own biases and foster an inclusive and equitable learning environment, ensuring that all pupils feel **respected**, **represented**, **valued**, and **supported**.
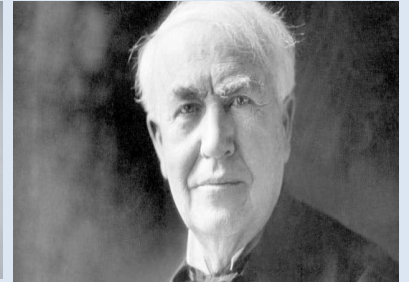
To build solid knowledge of diversity in design and technology, all phases have a **continent** assigned, which they use as an 'anchor point' across the whole curriculum. Phases use this to develop pupils' understanding of a **diverse range of inventors, designers engineers, chefs, architects and manufacturers**, from a range of time periods. By the time pupils leave Malin Bridge, they should have a solid understanding of a wider range of technology from people of different **ethnicities**, **ages**, **religions**, **sexualities**, **genders** and **abilities**.

See the overview document for more detail.

Assessment: *The Impact*

To help staff make a **summative assessment** of pupils achievement at key points during the academic year, there are clear skills and knowledge outlined that a child is expected to achieve by the end of each school phase. Children will only be assessed against what they have covered and teachers use their professional judgement to give a PITA *(Point in Time Assessment)* score; these range from 1-6. Please see the Curriculum booklet for more information. Teachers use class questioning, outcomes in books, discussions and the results of tests or quizzes to make this decision.

Y4 Design Technology Assessment Guidance

Attainment Targets

Quality and Value

Children achieving typically will be able to:

Evaluate historical and existing products and well as their own work.

Describe the **aesthetics** of a product.

Describe the **function** of the product.

Describe the **materials** used in the product and why they have been used.

Explain how well the product meets the needs of a **user**.

Describe the **environmental impact** of the product.

Sewing Bee

(see History Assessment Guidance for the Historical aspects of this unit)

Children achieving typically will be able to:

Explain the importance of a design criteria. Describe how they have used annotated sketches and diagrams in the textile design process. Describe how the mock up has helped their design. Select appropriate stitches and tools and explain the reasons for their choices. Describe their analysis of the Bayeux Tapestry and how this has informed their textile product.

Technical Knowledge: Explain the different stitch types and their function in terms of strength or aesthetics and end result for both the Bayeux Tapestry and their own textile product.

Notable Technologists: Name a notable fashion designer/tailor or seamstress and describe their achievements and impact on the textile industry.

Master Chef

Children achieving typically will be able to:

Describe how the design criteria can be modified and how it informs the design ideas. Explain what a porotype is and how it support the design process. Explain how they have used annotated sketches and exploded diagrams to communicate their design ideas. Explain why some foods need to be prepared in advance. Select the correct equipment and preparation and cutting techniques to make their food product. Describe how they have evaluated their product and the importance of product taste testing by intended user to ensure it meets consumer needs.

Technical Knowledge: Explain the importance of food hygiene and how to avoid cross contamination. Describe some cooking and food preparation techniques and when these would be best utilised.

Notable Technologists: Name a notable chef and describe their achievements and impact on the world of food technology.

Y4 Design Technology Assessment Guidance

Year 4 Attainment Target

Children achieving typically will be able to use research and develop a design criteria to design functional products that are fit for purpose and meet the needs of individuals or groups. They will be able to communicate their designs through discussions, drawings, annotated sketches and use of prototypes. Pupils will be able to selects a range of tools and equipment to practically perform tasks including cutting, joining and finishing with accuracy. They will be able to select and use materials and components including construction materials, textiles and ingredients based on the materials functional properties and aesthetic qualities. Children will be able evaluate both existing products and their own work against the design criteria and use feedback to suggest further improvements. They will be able to identify individual in design and technology that have contributed to the world of technology. Children will have developed the technical knowledge of how to strengthen more complex structures. Pupils will understand and use electrical systems in their products including circuits, switches, bulbs, buzzes and motors.

Key Vocabulary

Children working at ARE should be able to use the following vocabulary confidently and consistently:

RESEARCH, INNOVATION, FUNCTION, DESIGN, EVALUATE, CRITERIA, STRUCTURE, REINFORCE, ELECTRICAL, PRODUCT, TECHNOLOGY, PROPERTIES, AESTHETICS, INDUSTRY, PROTOTYPE

Children working at a PITA 3 will be able to do the majority of the above statements with support.

For children working above PITA 4, please see the Y5 attainment targets.

For children working below a PITA 3, please see the Y3 attainment targets.

Foundation subject assessment guidance sheets are available for Y1-Y6. These outline the Design and Technology units that have been covered for each year group and include appropriate attainment targets. These support teachers in assessing how well pupils can explain their substantive knowledge in the context the Design and Technology concepts. The assessment sheet contains an attainment descriptor of what a typical attaining child should be able to achieve by the end of the year. These, along with the knowledge sheets and skills sheets, help teachers to make their judgement.

A range of **formative assessment** strategies are used to help teachers to reshape the learning to meet the needs of all pupils in their class and ensure the pitch of the lesson is appropriate.

See the Responsive Teaching section and the Impact section of the Curriculum booklet for more information.

Appendices
(available on request)

Design and Technology Subject Story

Knowledge Sheets and Skills Sheets

Assessment Guidance Sheets

Curriculum Booklet

Curriculum Overview

Malin Bridge Primary School

Chorus Education Trust