



DESIGN TECHNOLOGY AT High Clarence



Our design technology curriculum aims to inspire children to combine their creativity with judgement. To value the design, make and evaluate process when creating functional products with users and practical purposes in mind.



Big Ideas



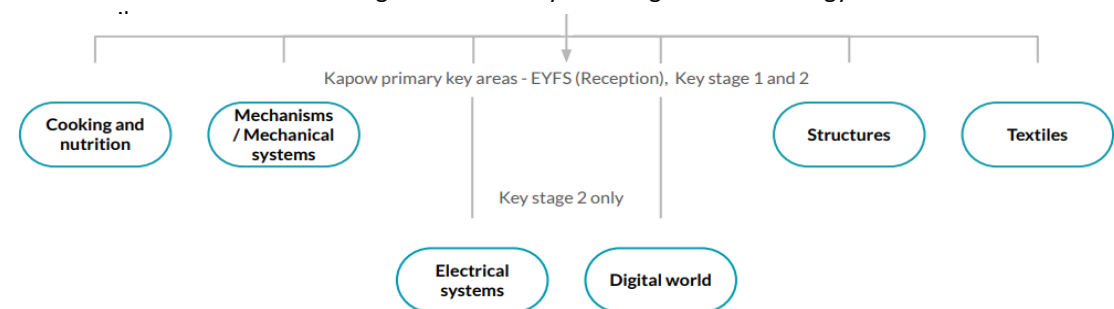
- **Investigate and Evaluate** existing products are explored to inspire ideas and find out about D&T in the wider world.
- **Focussed Tasks** to learn specific skills and technical knowledge to both design and make.
- **Design, Make and Evaluate** where children create functional products



Organisation and Sequencing



- Our scheme of work fulfils the statutory requirements outlined in the national curriculum (2014). The national curriculum Programme of study for Design and technology aims to ensure that all



Links with other subjects



- DT links to other subjects have been deliberately planned
- RE Easter content drive DT in Spring 2
- DT- transport is studied in history before moving vehicles are designed and made in DT.
- DT links to healthy eating and electricity in Science
- DT Links to Maths 3D structures in Year 3
- DT links to History WWII in UKS2



Retrieval Practice



- Knowledge, skills and vocabulary identified
- Knowledge organisers used to support recall and retention
- Low stakes quizzing to develop long term memory
- Key concepts identified (above) are revisited
- Key ideas are investigated by considering what they are and what they are not
- Links across year groups for retrieval of knowledge



Assessment/Intervention



- Pupil and staff voice tells us what is working well.
- Gaps are identified through end of unit assessments, enquiries, assessment for learning in lessons and outcomes of retrieval practice.
- Rapid responsive intervention takes place in the form of pre-learning, personalised provision.
- Intervention can simply be adapted questions, scaffolds, additional/less instructions



Accessibility



Everyone has access to the DT curriculum at the same pace.

Support is provided for those learners who require it- scaffolds are used to develop a secure understanding.

Considerations is given for learners who grasp concepts more rapidly- questions are used to deepen learning

Our scheme of work fulfils the statutory requirements outlined in the **national curriculum (2014)**. The national curriculum Programme of study for Design and technology aims to ensure that all pupils:

- ★ 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.
(*This aim is linked to the four strands, but is primarily met by teaching units from our Cooking and nutrition key area)

We have identified four key strands which run throughout our scheme of work:

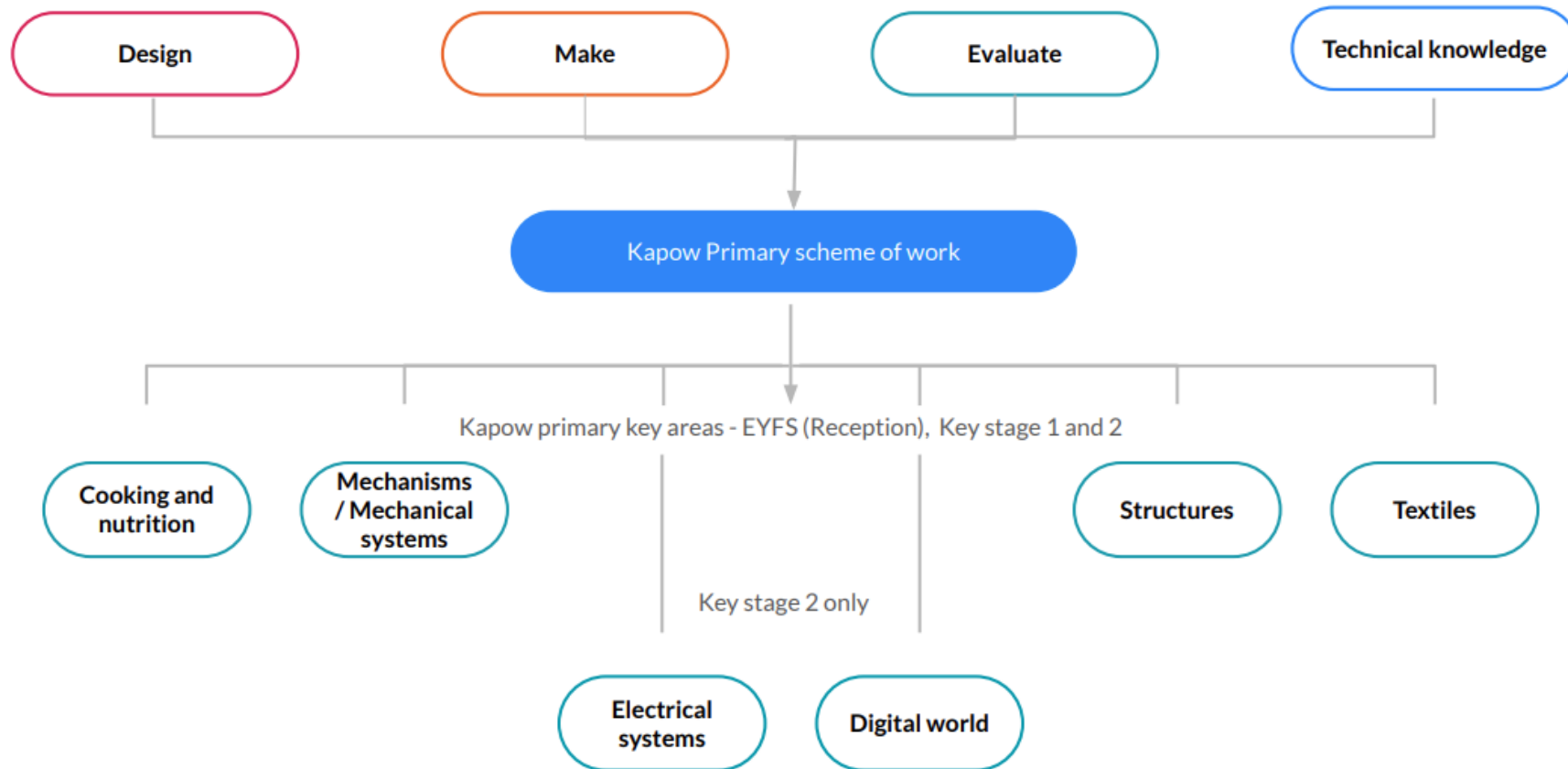
Design

Make

Evaluate

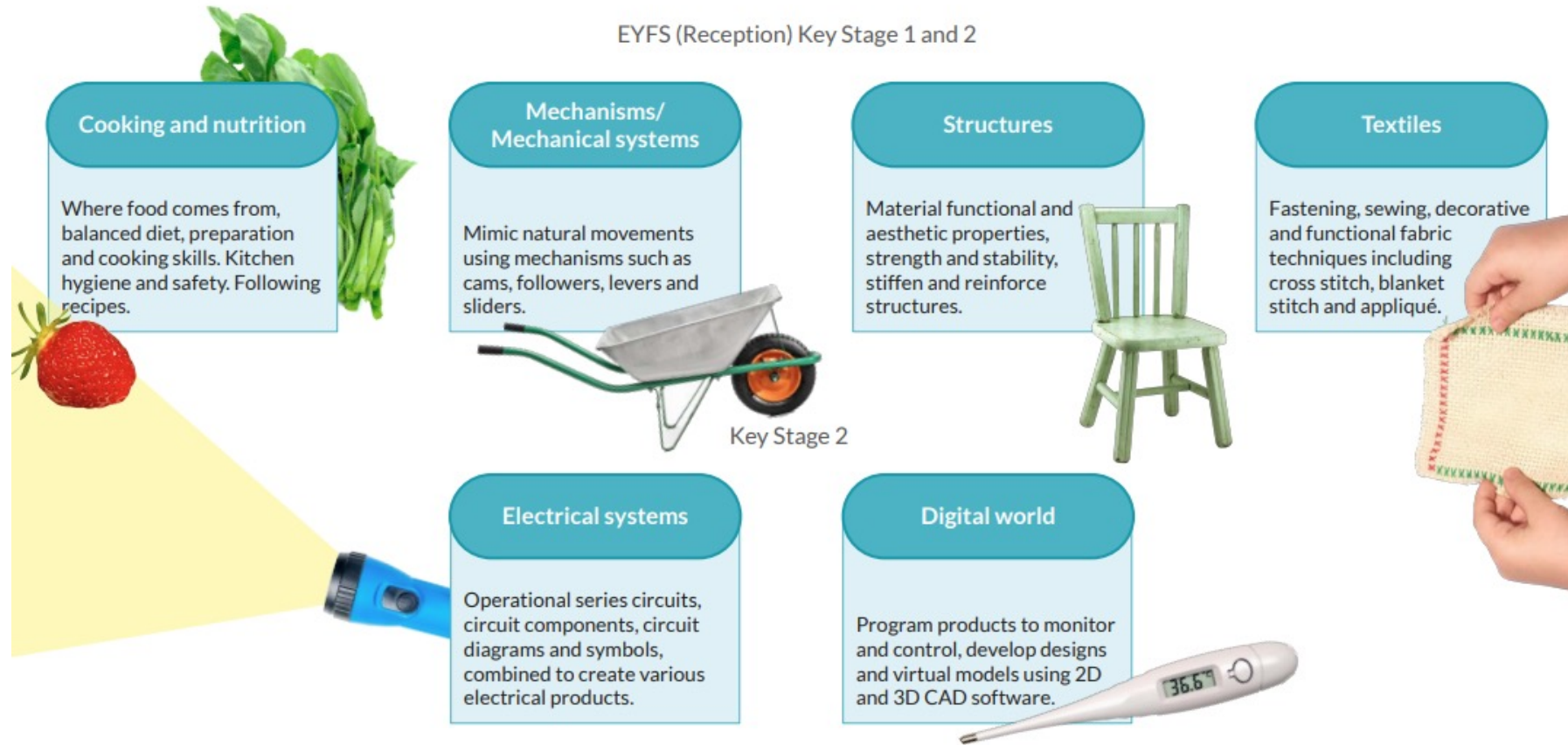
Technical knowledge

How is the Design and technology scheme of work organised?



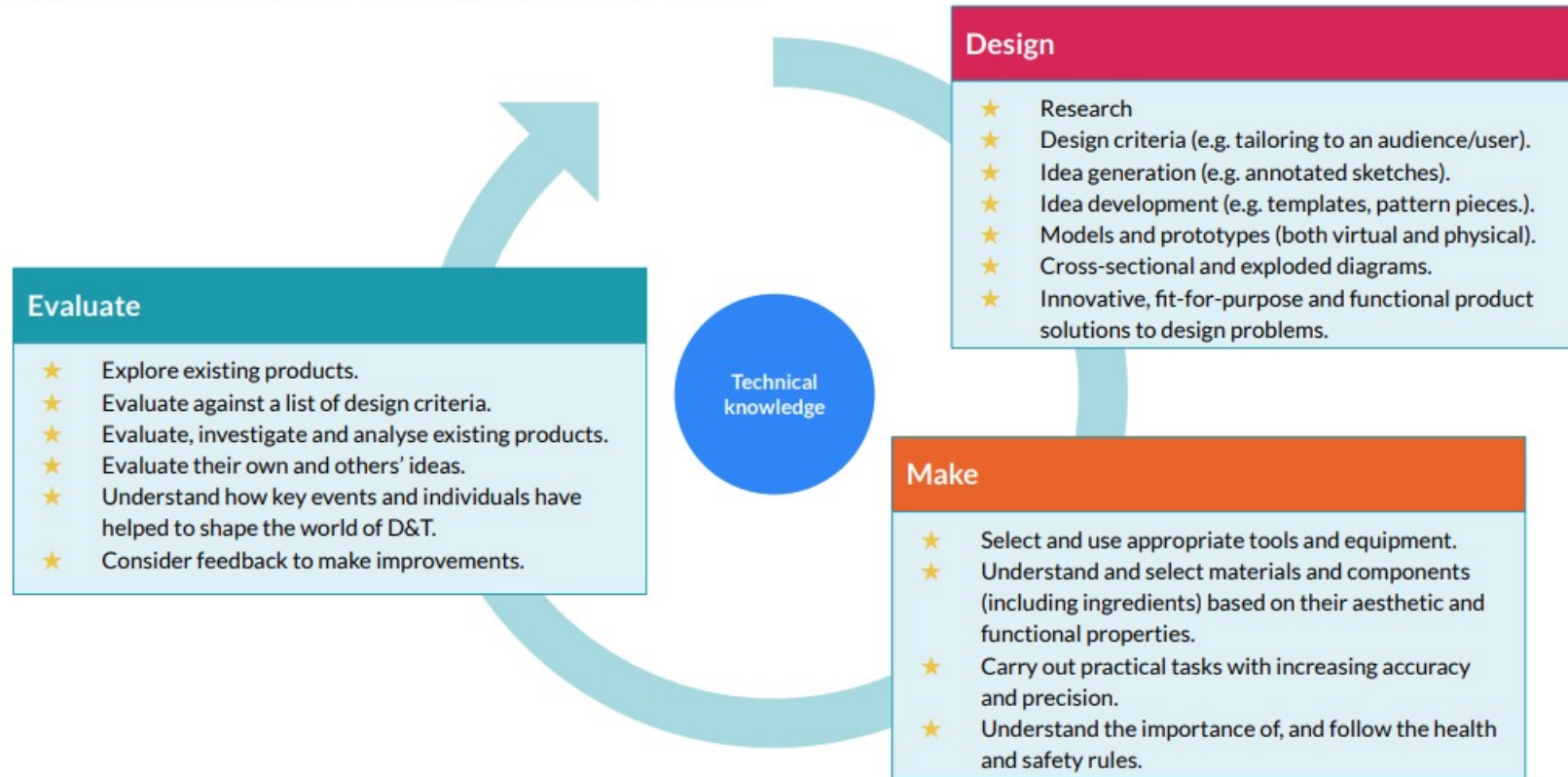
Key areas

The six key areas are revisited each year, with Electrical systems and Digital world beginning in KS2. The areas enable all subject leads, specialists or non-specialists, to understand and make it easy for teachers to see prior and future learning for your pupils. You can see, at a glance, how the unit you are teaching fits into their wider learning journey.



The design process

The Design and technology National Curriculum outlines the three main stages of the design process: design, make and evaluate. Each Kapow Primary unit follows these stages, to form a full project. Each stage of the design process is underpinned by technical knowledge which encompasses the contextual, historical and technical understanding, required for each strand.



Cooking and nutrition* has a separate section in the D&T National Curriculum, with additional focus on specific principles, skills and techniques in food, including where food comes from, diet and seasonality. Cooking and nutrition units still follow the design process summarised above, for example by tasking the pupils to develop recipes for a specific set of requirements (design criteria) and to suggest methods of packaging the food product including the nutritional information.

Each of our key areas links to the technical knowledge section of the Design and technology National Curriculum **or** reinforces principles learnt through exploring various methods and techniques. From KS1 to KS2, the technical knowledge descriptors build upon prior learning and/or introduce new learning.

	Structures	Mechanisms	Textiles	Electrical systems	Digital world	Cooking and nutrition
EYFS	<p>Explore junk modelling, tinkering with temporary and permanent joins, and a range of materials.</p> <p>Create basic models to test in different conditions.</p>	Explore a simple paper slider mechanism.	Explore and develop threading and weaving skills with different materials and objects.			Explore and become familiar with different fruits and vegetables, using their senses.
KS1	<p>Build structures such as windmills and chairs, exploring how they can be made stronger, stiffer and more stable.</p> <p>Recognise areas of weakness through trial and error.</p>	<p>Introduce and explore simple mechanisms, such as sliders, wheels and axles in their designs.</p> <p>Recognise where mechanisms such as these exist in toys and other familiar products.</p>	Explore different methods of joining fabrics and experiment to determine the pros and cons of each technique.	<p>KS2 only*</p> <p>Create functional electrical products that use series circuits, incorporating different components such as bulbs, LEDs, switches, buzzers and motors.</p> <p>Consider how the materials used in these products can:</p>	<p>KS2 only*</p> <p>Learn how to develop an electronic product with processing capabilities.</p> <p>Apply Computing principles to program functions within a product including to control and monitor it.</p> <p>Understand how the history and evolution of product design lead to the on-going Digital revolution and the impact it is having in the world today.</p>	<p>Learn about the basic rules of a healthy and varied diet to create dishes.</p> <p>Understand where food comes from, for example plants and animals.</p>
KS2	<p>Continue to develop KS1 exploration skills, through more complex builds such as pavilion and bridge designs.</p> <p>Understand material selection and learn methods to reinforce structures.</p>	<p>Mechanical systems</p> <p>Extend pupils understanding of individual mechanisms, to form part of a functional system, for example: Automatas, that use a combination of cams, followers, axles/shaft, cranks and toppers.</p>	<p>Understand that fabric can be layered for effect, recognising the appearance and technique for different stitch and fastening types, including their:</p> <ul style="list-style-type: none"> • Strength. • Appropriate use. • Design. 	<ul style="list-style-type: none"> • Protect the circuitry. • Reflect light. • Conduct electricity. • Insulate. 		<p>Understand and apply the principles of a healthy and varied diet to prepare and cook a variety of dishes using a range of cooking techniques and methods.</p> <p>Understand what is meant by seasonal foods.</p> <p>Know where and how ingredients are sourced.</p>

Assessment in Design and technology

Formative assessment

Every lesson begins with the 'Recap and recall' section which is intended to allow pupils retrieval practice of key knowledge relevant to the upcoming lesson. This section also provides teachers with an opportunity to make informal judgements about whether pupils have retained prior learning and are ready to move on.

Each lesson contains the 'Assessing progress and understanding' section which helps teachers to identify those pupils who are secure in their learning or working at a greater depth in each lesson. These assessments can then be recorded on our [Design and technology: Assessment spreadsheet](#) which supports the teacher in identifying gaps in learning amongst the class or for individual pupils.

Summative assessment

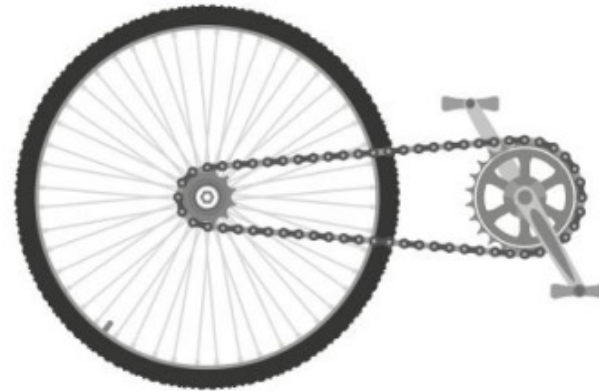
Each unit of work assesses children's understanding and retention of key knowledge using an assessment quiz with multiple choice and open-ended questions.

In addition, each unit uses a knowledge catcher. This can be used at the beginning and/or end of a unit and gives children the opportunity to further demonstrate their understanding of the key concepts covered.

Assessment quizzes, and knowledge catchers provide teachers with a record of summative assessment as evidence of progression throughout the year and as pupils move between key stages.

Knowledge catcher: Gears and pulleys

Annotate the diagram to explain how it works and what its purpose is.



Question

Describe how the gear mechanism in a bike transfers motion from one part of the system to another.

Design and technology in EYFS (reception)

Child-led learning is integral to the Early Years curriculum, and rightly so. Supporting children in following and exploring their own interests allows for a greater depth of learning and understanding and much higher levels of wellbeing and engagement.

Adults in the classroom can model how to use Design and technology to aid children in their pursuits and scaffold the learning so that they can reach a deeper level of understanding.

We know that the difficulty with child-led Design and technology projects often arises when the pupils are not equipped to properly plan their creation or execute their ideas in the way that they wish, sometimes meaning that they will spend a very short amount of time at the workshop or junk modelling area before moving on.

Planning, designing, making and developing skills and knowledge are all fundamental parts of our Design and technology scheme. As you work through our EYFS reception units, children will have plenty of opportunities to get to know each of these areas, as they explore different materials, processes and outcomes.

When pupils are accessing these areas outside of lesson times, it is your job to support and scaffold their learning, offering suggestions or listening to their ideas. Rather than creating artificial learning opportunities during these times of child-led play, instead wait until you observe that a child or group of children have shown a particular interest in a topic. Offer to help them enhance their chosen area of exploration by providing additional resources, demonstrating how to use existing resources or even using the computer.



Oracy in Design and technology

'Oracy is the ability to speak eloquently, to articulate ideas and thoughts, to influence through talking, to collaborate with peers and to express views confidently and appropriately.'

Oracy refers both to the development of speaking and listening skills, and the effective use of spoken language in teaching and learning. It is to speech what literacy is to reading and writing, and numeracy is to Maths.'

Speak for Change: Final report and recommendations from the Oracy All-Party Parliamentary Group Inquiry.

Through our Design and technology curriculum, pupils have opportunities to develop their oracy skills by:

- Presenting their design ideas or products to audiences of different sizes.
- Explaining designs, preferences or final products.
- Role-playing from the point of view of the user.
- Discussing products and design ideas using new vocabulary.
- Collaborating by organising tasks within a group.
- Critiquing others' designs and products.
- Reflecting on and responding to feedback towards their own designs and products.
- Summarising design ideas.

Learning *through* talk

At Kapow Primary, we believe it's crucial to provide pupils with opportunities for exploratory talk during their learning. This involves thinking aloud, questioning, discussing, and collaboratively building ideas.

Learning *to* talk

Similarly, developing oracy skills is essential for pupils to express and articulate themselves effectively across various contexts and settings, including formal ones like public speaking, debates, and interviews.





The scheme of work has been designed as a spiral curriculum with the following key principles in mind:



✓ Cyclical: Pupils return to the key strands again and again during their time in primary school.




✓ Increasing depth: Each time the key strand is revisited it is covered with greater complexity.



✓ Prior knowledge: Upon returning to each key strand, prior knowledge is utilised so pupils can build upon previous foundations, rather than starting again.






Design

Make

Evaluate

Technical knowledge



Some key areas appear less frequently than others, for example Textiles, and this is deliberate. The National curriculum statements below show that working with textiles is only a small element of the Make strand and many of the making techniques covered in our Textiles units are also covered with a range of materials in other units, such as the use of templates, modelling, measuring and marking out, cutting, shaping and joining.

Make (KS1)

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

Make (KS2)

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

