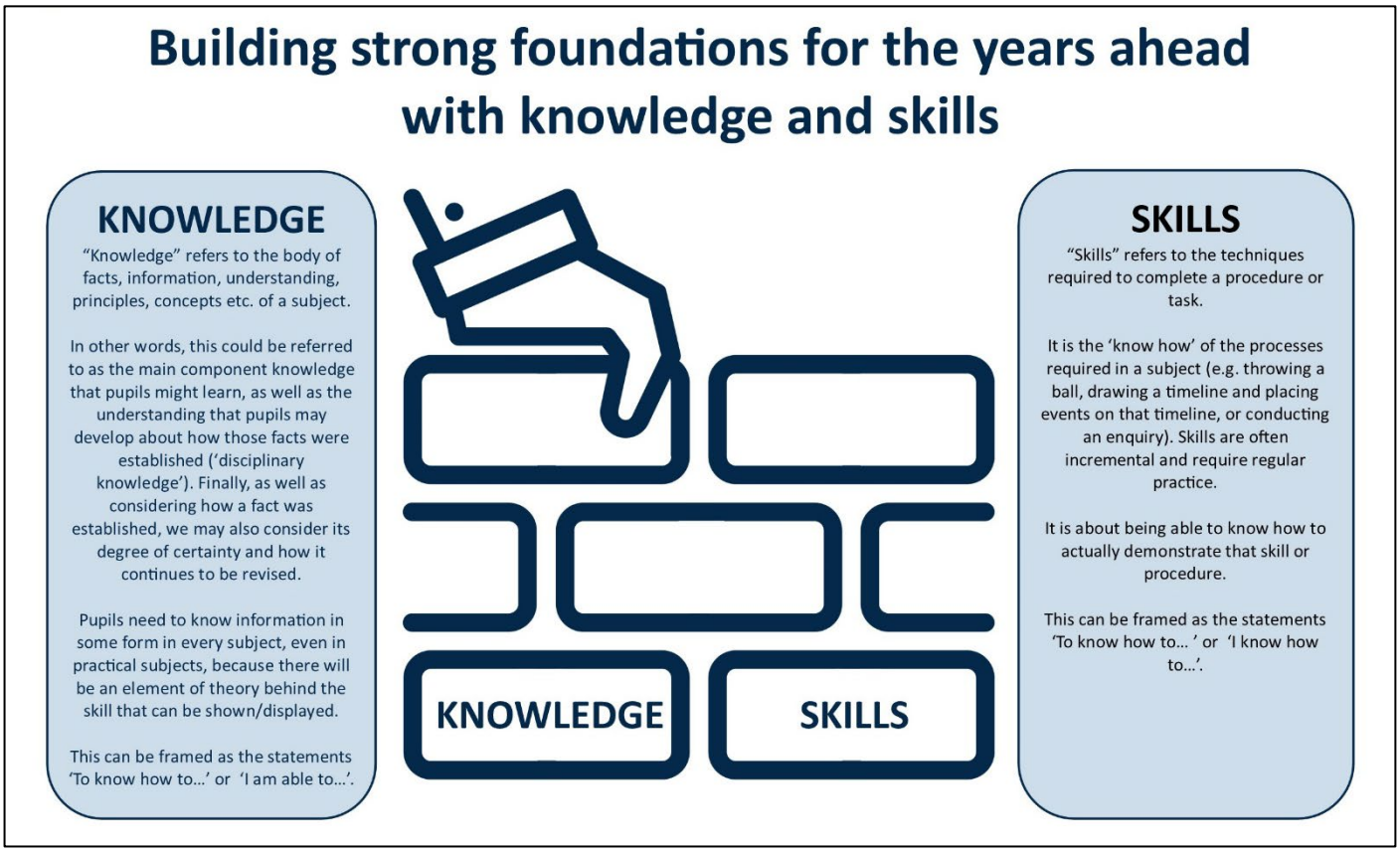
Knowledge and skills: Introduction

At Sonning, we first considered the concept of knowing more, doing more and remembering more. Therefore, from our research, we have a shared and consistent understanding of different types of knowledge. Each subject will have a different ratio of distribution for these types of knowledge, and the types of knowledge can (and most often do) intersect.

1. Knowledge refers to the body of facts, information, understanding, principles and concepts etc. of a subject. In other words, this could be referred to as the main component knowledge that pupils might learn (e.g. how a pulley works or the knowledge of different materials and their properties), as well as the understanding that pupils may develop about how those facts were established (aka disciplinary knowledge). Finally, as well as considering how a fact was established, we may also consider its degree of certainty and how it continues to be revised. Pupils need to know information in some form in every subject, even in practical subjects, because there will be an element of theory behind the skill that can be shown/displayed.

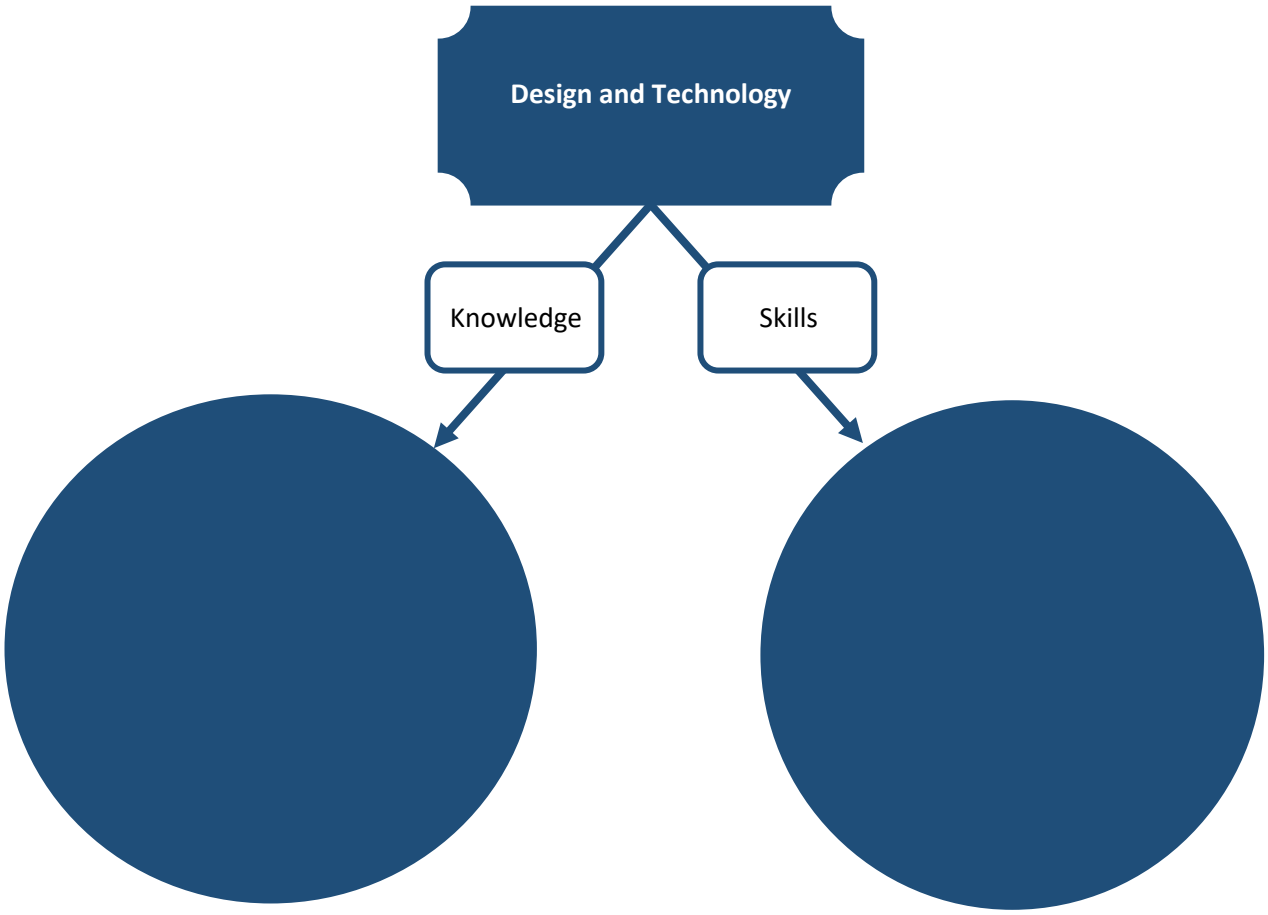
2. Skills refers to the techniques required to complete a procedure or task. It is the 'know how' of the processes required in a subject (e.g. the actual skill of being able to thread a needle and sew using a cross-stitch). Skills are often incremental and require regular practice. It is about being able to know how to actually demonstrate that skill or procedure.



Sonning's Infographic on Knowledge and Skills

Knowledge distribution

We recognise that different subjects have different weightings of knowledge and skills. The infographic below highlights what we consider to the ratio of each form of knowledge within this subject:



Our vision

Design and Technology at Sonning Church of England Primary School provides pupils with the opportunity to participate in a range of different activities where they develop a variety of practical skills. Our vision for Design and Technology is for pupils to develop the theory and practical skills necessary to build strong foundations for success in the future as critical thinkers, developers, designers and makers. By learning core skills in researching others' work, designing their own products, learning the skills to create these products and evaluating the success of their work, pupils will embed core skills that will help them not just in Design and Technology, but across their academic and working lives and will enable them to contribute positively and effectively to society. Design and Technology is taught as a discrete subject however, at all stages, there is an emphasis on linking Design and Technology with other subjects, where possible and appropriate.

Early Years Foundation Stage (Acorn class)

In the Early Years Foundation Stage (EYFS), the foundations for Design and Technology (DT) are developed through hands-on exploration, creativity and problem-solving. Children learn how to generate ideas, plan and create with increasing independence, using a variety of tools and materials including scissors and cutlery. Through practical experiences, they develop key skills in cutting, joining and manipulating materials, building confidence in their ability

to construct and design. Through the EYFS, children develop knowledge and skills across seven areas of learning, which include Physical Development, Expressive Arts and Design, Understanding the World, and Communication and Language – all of which provide strong foundations for Design and Technology (DT) in the National Curriculum:

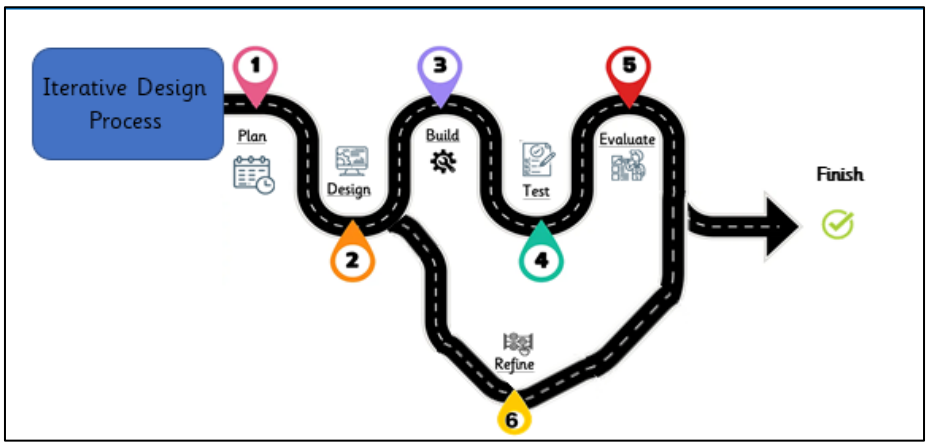
- Physical Development supports fine motor skills needed for cutting, threading, and assembling materials, as seen in activities such as threading wool through a single hole punch to create a flower.
- Expressive Arts and Design encourages creativity and problem-solving allowing children to explore different textures, structures, and materials particularly through junk modelling.
- Understanding the World fosters curiosity about how things work, linking to designing, making, evaluating products and introduces concepts such as food preparation and healthy eating, such as in Cooking and Nutrition, where the children create a healthy fruit smoothie.
- Communication and Language is essential for articulating ideas, discussing processes, and evaluating outcomes.

This aligns with the Early Learning Goals, as children develop fine motor control and coordination when handling tools such as scissors, hole punches, and cooking utensils. Through expressive arts and design, they explore materials safely, experiment with construction techniques, and use their creativity to bring ideas to life. Understanding the world is embedded in their learning as they discover where food comes from and make informed choices about healthy eating. Additionally, communication and language are key, as children express their ideas, explain processes, and reflect on their creations, developing confidence in speaking and sharing their thoughts.

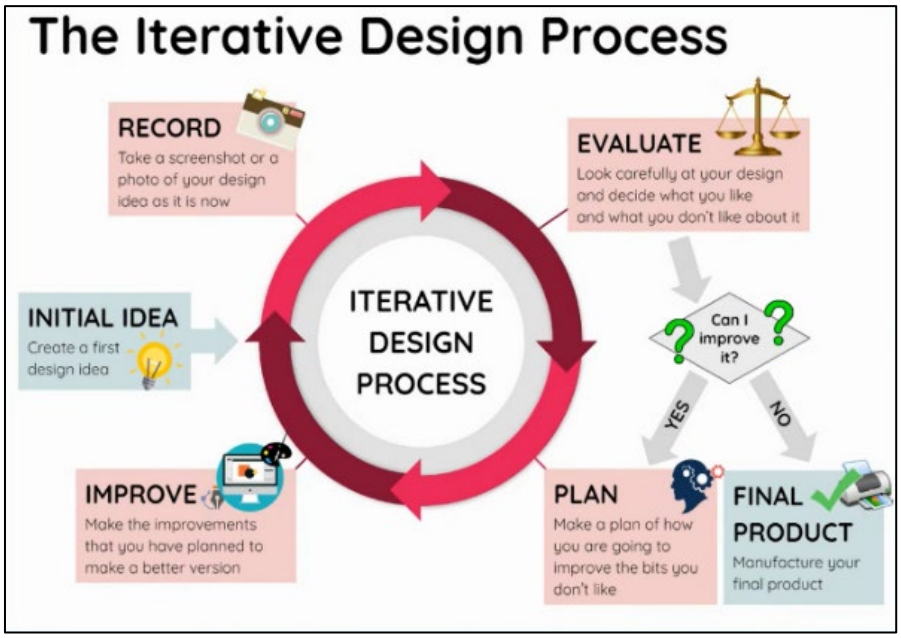
These early experiences align with the DT National Curriculum, where pupils build on these foundations through structured design, making and evaluation tasks using various materials and techniques. EYFS provides exploratory, play-based learning, while the National Curriculum formalises these skills into a structured approach to problem-solving and product design.

Key Stage 1 (Beech and Chestnut classes)

In Key Stage 1 (KS1), the DT curriculum focuses on developing pupils' creativity, technical knowledge, and practical skills through structured projects. Pupils will learn about the iterative design process, and learn to design, make and evaluate products with a clear purpose, developing problem-solving abilities and resilience. They explore a range of materials, including construction materials, textiles and food. They will utilise research and planning, learning the skills to suit their unit and putting those skills into action when making a product. They will review their products and use peer and teacher evaluation to suggest improvements. With adult support, pupils have the opportunity to use a range of cooking utensils, sew in small groups and begin develop discipline-specific skills. A key element is cooking and nutrition, where children learn about healthy eating, basic food preparation and the importance of a varied diet. Through these activities, they develop essential skills in planning, collaboration and iterative thinking, laying the groundwork for more complex DT learning in Key Stage 2.



Key Stage 2 (Fir, Holly, Maple and Oak classes)
In Key Stage 2 (KS2), the DT curriculum builds on the foundations from Key Stage 1, developing pupils' skills in designing, making, evaluating and applying technical knowledge. This will enable them to be more detailed, accurate and competent in every part of iterative design process. Pupils will design increasingly complex and challenging products, including using pulleys, pneumatics and electrical circuits. They will have the opportunity to use a greater range of cooking methods and tools including saws, drills, glue guns and finishing methods to produce aesthetically pleasing final products. Cooking and nutrition continue to be a key focus, with pupils learning about seasonality, food sourcing, and preparing a wider range of dishes using appropriate tools and techniques. Pupils are then encouraged to build on the technical skills acquired in previous units (as well as Science and Computing) and apply these with increasing independence. Throughout Key Stage 2, pupils engage in iterative design, testing and improving their products, developing problem-solving skills, resilience, and creativity in preparation for more advanced study in Key Stage 3.



Building strong foundations through experiences
To complement the curriculum, there are visits from experts, themed class events and educational visits, and local area visits, all of which enhance pupils' understanding and provide varied learning experiences.

Curriculum coverage

At Sonning, we follow the National Curriculum for all our subjects. To ensure the National Curriculum is covered effectively, there is an edited version of the National Curriculum which has notes to highlight where in our Unit Maps a statement or section is covered within our strategic documents and planning.

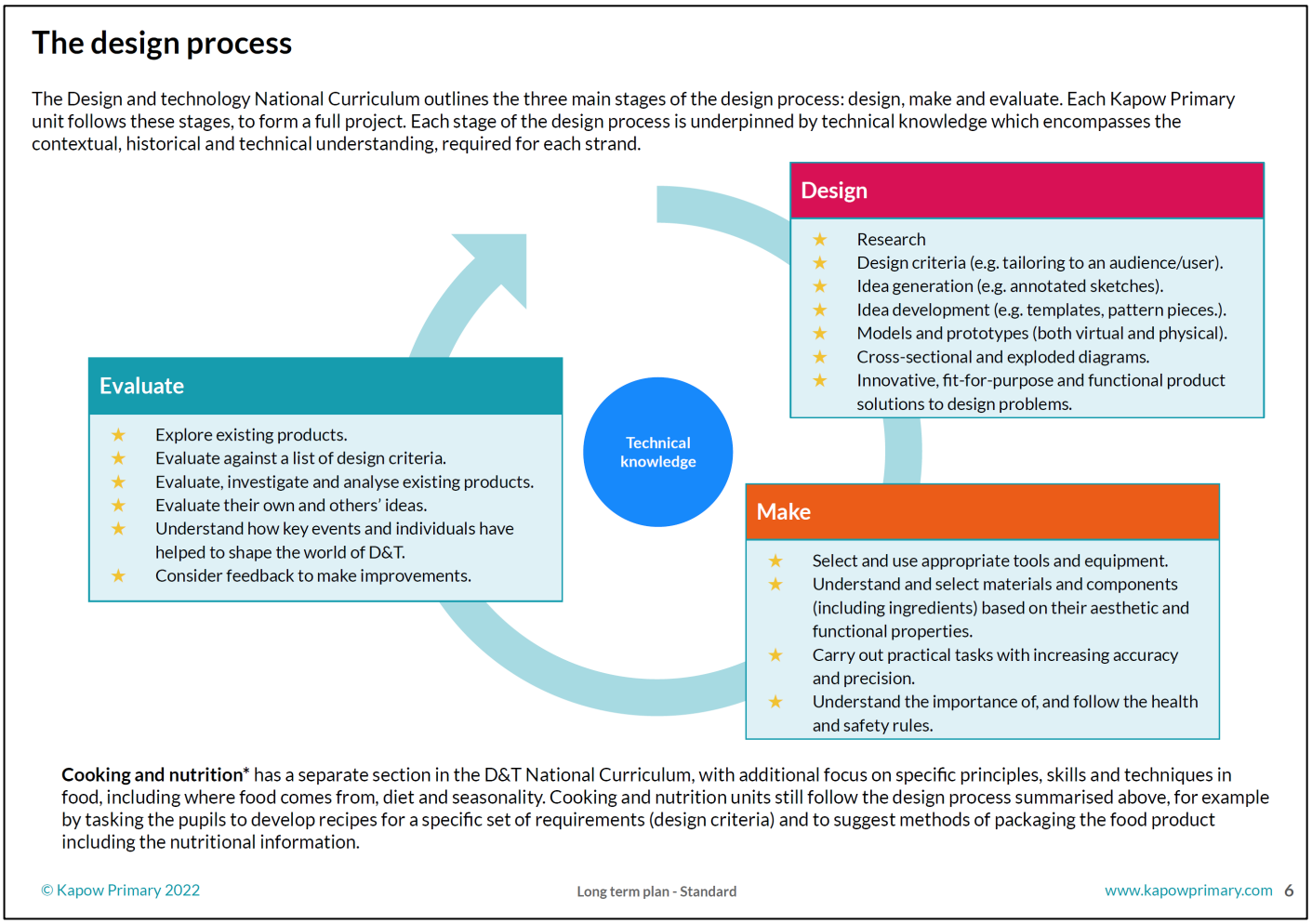
Schemes of work

In DT, we also, on occasion, use adapted units from a scheme called Kapow to support the subject in Years 1 to 6. However, we have chosen specific units (or parts of units) carefully to match our ambitions for the subject. We have also reviewed the Kapow progression of knowledge and skills documents to ensure that this strategic planning is appropriate for our school community and links with our curriculum vision (and the National Curriculum).

Curriculum structure

Design and Technology is blocked and taught during one half term of a full term. This ensures that three units are taught in each year group, covering a range of knowledge and skills and where possible, cross curricular links are made. Years 5 and 6 have an extra unit, centred around 'Digital World'. We will encourage children to use the evaluation process as a time of reflection considering both the positive and negative elements of their project and using this to improve their future projects. We believe Cooking and Nutrition to be invaluable in the knowledge and build-up of practical skills, which will build foundations for life-long healthy relationships with food. For this reason, every class will have the opportunity to cook and prepare a range of foods. We use retrieval practice, knowledge organisers and other methods to ensure that pupils are prepared for their subject and focus on the right objectives during lessons. Subject-specific vocabulary is taught and we aim to deepen understanding through questioning.

As well as the prior information on the Iterative Process, Kapow's 'Design, Make and Evaluate' process is considered:



Taken from Kapow's LTP document

Building on and revisiting learning

Our units rely on a 'spiral curriculum' model, which ensure we can revisit concepts and cumulatively build knowledge and skills.

A spiral curriculum

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

- ✓ Cyclical: Pupils return to the key knowledge and skills again and again during their time in primary school.
- ✓ Increasing depth: Each time a skill is revisited it is covered with greater complexity.
- ✓ Prior knowledge: Prior knowledge is utilised so pupils can build upon previous foundations, rather than starting again.

Taken from Kapow's LTP document

Unit Maps

Our Unit Maps provide the overview for each subject's unit of lessons for a topic. This includes the following:

Knowledge taught / prior knowledge
Knowing what core substantive knowledge to teach, as well as prior learning which we can build on, is essential to ensuring clear progression and depth of understanding in a subject.

Milestones and assessment opportunities
This is covered in more information below as part of the 'Assessment' section.

Concepts
Each subject has concepts which run through every unit and year group. These concepts allow consistency of focus and progression within each concept from unit to unit and year to year. Our key concepts are as follows:

Appraisal and Knowledge of Others' Work	Developing Ideas and Planning	Making and Producing	Evaluating and Improving

Vocabulary
As part of our focus on oracy, we have developed a list of Tier 2 and Tier 3 vocabulary to cover within a unit. This vocabulary also links into our knowledge organisers, so that the pupils have access to this essential vocabulary. The vocabulary required in each unit is also part of a wider vocabulary progression document that we have produced.

A knowledge organiser, in line with our school's format, is shared with pupils from the beginning of the unit and referred to throughout lessons to help embed key concepts and vocabulary.

Cross curricular links
It is important to understand how subjects can work with each other, so there are specific links to other subjects outlined in the Unit Maps. This includes referencing (at an age-appropriate time and level for the pupils), the period of time in which an designer lived, and how this may have affected their work. However, it is important to note that this does not detract from the focus we have on teaching each unit as part of a discrete subject.

Links with our values, spirituality and organisations
Our school values are part of everything we do. To ensure that is seen within the curriculum, we make explicit links to our values, as well as British Values, spirituality and OECD and UN objectives.

Assessment

When assessing progress, we use a range of methods and opportunities:

Formative assessment

Teachers use AFL strategies on an ongoing basis so that misconceptions can be identified and addressed at the earliest point. It is used to assess pupils' knowledge. Pupils are regularly given the opportunity for self or peer assessment, which will then be used to inform planning, preparation, adaptations and address misconceptions within that lesson, or for the next lesson.

Children are given opportunities to retrieve information and to demonstrate their learning throughout each unit of learning. Each unit includes opportunities for retrieval practice which can be used to reinforce and revisit both learning and vocabulary. These questions are also used as part of retrieval practice, and prior learning will be revisited throughout lessons or units, checking recall of previous lessons. This could be through oracy or written tasks.

Summative assessment: Milestones and assessment opportunities

Our milestone objectives and assessment opportunities ensure that there is clear progression and we know how to assess those types of knowledge and outcomes within a unit. These milestones are derived from the National Curriculum to ensure that staff know the key component knowledge and skills required for pupils to experience progress and success. These are mapped out for coverage and breadth in a separate document.

Measuring impact

We measure the effectiveness of our curriculum in the following ways:

- Pupil data tracking (Sonar and other internal tracking methods)
- Work scrutiny
- Monitoring of lessons and planning (including from SLT, governors and external validation, e.g. TKAT)
- Pupil conferencing.

When evaluating our curriculum, we also ask ourselves the following questions:

Do we provide a high-quality curriculum and inspires pupils?

- To what extent do our children show independence, resilience and high aspirations in the subject?
- To what extent does our curriculum provide new experiences and challenges?
- To what extent do the children engage with high quality resources?

Do we ensure pupils know more, do more and remember more?

- To what extent do children retain the knowledge learnt?
- To what extent does the curriculum build over time?
- To what extent do children make progress against milestones over time?

Does our curriculum allow oracy development and the opportunity for pupils to collaborate?

- To what extent does our curriculum use/teach high quality language?
- To what extent does the curriculum provide opportunities to work collaboratively?
- To what extent does the curriculum support children with oracy skills?

Is our curriculum inclusive?

- How well is learning broken down, explained and scaffolded/adapted appropriately in the subject?

- How well are assessment forms used to inform planning in the subject?
- To what extent does the curriculum meet the needs of all learners including SEND/ EAL etc?

Do we help our pupils become better people in the wider world and prepare them for life in Modern Britain?

- To what extent does the curriculum allow children to take responsibility for their learning?
- To what extent does our curriculum allow for diversity?
- To what extent does the curriculum offer opportunities to present work in creative ways?
- To what extent does the curriculum offer opportunities to discuss content and/or questions and consider them in an open forum?
- To what extent does offer opportunities to utilise the skills of the wider community?

Supplementary support

We utilise the following support within our curriculum for this subject:

- Design and Technology Association subscription (https://www.designtechnology.org.uk/)
- TKAT subject network meetings
- Local STEM projects, such as 3M, or local school partners such as Reading Blue Coat School and other local secondary schools.