

Askwith Primary School

Design and Technology rationale

Our curriculum offer for design and technology begins in Early Years. 'Children develop quickly in the early years and a child's experiences between birth and age five have a major impact on their future life chances.'

EYFS Statutory Framework, 2021

Our planning, teaching and assessment of the curriculum is informed by the nine principles of cognitive science (Daniel Willingham). This includes the 'must haves' or the end states in the child's mind and the 'could dos' or the teacher behaviours that alter the states in the child's mind. In design and technology, we recognise the 'must haves' as the alteration to long-term memory that allows children to retrieve substantive and disciplinary knowledge fluently, and to have a positive self-image as a learner. We recognise the 'could dos' as sequenced lessons in design and technology of the essential knowledge, the explicit teaching of vocabulary and abstract concepts, retrieval practice for knowledge and interleaving.

The fundamental role of design and technology at Askwith Primary School lies in allowing children the opportunities to apply their creativity and their imagination to create products to solve real and relevant problems. Design and technology allows all children (this includes SEND, EAL, PP and vulnerable children) opportunities to create products for their own needs and wants along with the needs, wants and values of others, including British Values and natural links to our global themes.

At Askwith Primary School, we believe that all children's education begins in Early Years. Our curriculum is aligned to the Early Years Framework and shows the sequential steps of essential knowledge acquired from Reception to Year 6.

Design and technology is an evaluative subject and children are given the chance to draw on the disciplines of other subjects, including mathematics and science.

"High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation."

National curriculum, 2014

COVID-19

It is very important that we do as much as possible to remediate the learning loss suffered by the missed months of schooling. In the first instance, assessment information should enable us to answer the following questions:

- 1. Have our pupils lost knowledge gained pre COVID-19? If so, how can this learning loss be mitigated?
- 2. Have our learners lost knowledge during closure/non-attendance? If so, how can this learning loss be mitigated?

In geography, we had long term plans for 2020-2021 that addressed these areas of learning loss. Our aim was to use knowledge checks of essential knowledge to assess knowledge gained pre COVID-19 in the first term and prior knowledge assessments to assess knowledge lost during closure throughout the first term. We aimed to address any forgotten knowledge and misconceptions diagnosed from the pre COVID-19 knowledge checks and ensure essential lost learning from school closure was secure before moving onto the teaching and learning of new knowledge.

| Intent | Implementation | Impact: to be reviewed at the end of each year |
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| <p>All knowledge is embedded from 2020-2021</p> <p>The planning, teaching and assessment of the design and technology curriculum is informed by the nine principles of cognitive science (Daniel Willingham)</p> | <ul style="list-style-type: none"> • All knowledge checks to include connected knowledge from the previous units of learning to ensure there are no gaps or forgotten knowledge. • All gaps in knowledge and forgotten knowledge to be taught before new knowledge • Planning and learning journeys consider the essential knowledge and how to guide pupils' thinking • Factual essential knowledge is taught before the skill • Working memory capacity and the alteration of long term memory is considered when planning and teaching (planned thinking time, knowledge checks) • Connected knowledge, particularly knowledge of vocabulary is built on to deepen understanding • Prior knowledge is assessed, misconceptions addressed and new knowledge builds on pupils' connected knowledge | |

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| <p>Design and technology is taught throughout the school through deliberate practice in a supportive environment. This enables children to improve their fluency leading to mastery of design and technology and an alteration to long term memory.</p> | <ul style="list-style-type: none"> • Pupils have opportunities to deliberately practise newly acquired knowledge • Pupils articulate how they know more, remember more and therefore do more • Instil a growth mind-set ethos by talking about successes and failures in terms of effort not ability <ul style="list-style-type: none"> • Rolling programmes are carefully planned to show progression in knowledge throughout the curriculum for each class, and to build knowledge from one class to another. Cut, join and finishing knowledge will progress children's knowledge of how to manipulate these materials. • Children are provided with the knowledge to develop ideas from a plan, to making a product and then to evaluate what they have made. | |
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Substantive and disciplinary knowledge in design and technology

Substantive knowledge in design and technology is based on the knowledge of four key elements of the process of design (design, make, evaluate and technical knowledge). All of these elements will be taught from Reception to Year 6 and vocabulary is taught explicitly and will be deliberately practised and applied through the 4 key elements. These are:

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| <p>Design</p> | <p>Know how to design a product that is purposeful, functional and appealing to a specific group.</p> |
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| Make | Know how to cut, join and finish a range of increasingly complex materials, ranging from paper to wood. |
| Evaluate | Know how to investigate, evaluate and analyse a range of existing products and their own designs based on a specific design criteria. In addition to this, children will know key individuals have helped to shape the world in which we live in. |
| Technical knowledge | Know how to apply their knowledge of specific materials to meet the criteria listed above in the design, make and evaluate stages. |

Disciplinary knowledge in design and technology is the process of enabling children to use their substantive knowledge of products and materials around them to make links between and across different areas of the curriculum. Knowledge in design and technology will equip the children with the opportunity to explain how and why products have changed over time and how they might be further improved in the future. They can use their knowledge and understanding to suggest how existing products may be improved with the advances in modern technology. Children will demonstrate that they have the cultural capital to become global citizens, following global themes and fundamental British Values, in an ever changing and technologically advancing world.

Why this? Why now?

The rolling programme of units of knowledge allows for mixed year classes to acquire essential knowledge over two years (year A and year B).

- Cooking and nutrition (Year 1 and 2, Year A and B, Autumn)

During this unit of knowledge, the children learn about where vegetables (Year A) and fruits (Year B) come from and how to prepare and eat them. This unit will be revisited throughout Year 1 and 2 in science when the children learn about the different food groups and the importance of eating a balanced diet.

- Textiles (Year 3 and 4, Year A, Spring)

This unit of knowledge builds on the connected knowledge the children have of vegetables and fruits from key stage one. They will learn how different foods have natural dyes in them and how these can be transferred to fabrics. There is also connected knowledge with art and how to dye materials with a range of dyes.

- Structures with electrical systems (Year 3 and 4, Year A, Spring)

This unit of knowledge is in the spring term because prior to this the children will have learnt about electrical circuits in science so they will have connected knowledge of the construction of an electrical circuit before they apply that knowledge into a structure.

- Wooden structures with electrical components (Year 5 and 6, Year A, Summer)

During this unit of knowledge, the children will apply their connected knowledge of electrical circuits from science to incorporate an electrical element into their wooden structure. For the year 5 children, it will be applied from their learning in year 4 and for the year 6 children it will be applied from their science learning in year 5. This unit also provides children with the opportunity to build on their knowledge of structures from year 3 and 4 when they used paper and card and apply this learning to the construction of a wooden structure.

Creativity in design and technology

"Creativity is the act of turning new and imaginative ideas into reality, the tendency to generate or recognise ideas, alternatives or possibilities that may be useful in solving problems, communicating or in finding gratification or entertainment."

P. Woodward, TES 2016

"Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values."

National Curriculum, 2014

There are many opportunities for children to demonstrate their creativity in design and technology. This can be through the design phase, the making phase - where they make additions or alterations to their plan, or during the evaluation phase where they can think how the product may be further improved. It is a subject which has wide ranging opportunities for natural cross-curricular learning, whether that be through planning using exploded or cross-sectional diagrams, scientific investigation into the properties of different materials in a range of situations, the historical changes in technology and the advancements made by specific individuals or detailed mathematical measurements of lengths and angles.

British Values

Design and technology at Askwith Primary School develops children's understanding of Fundamental British Values and how to express themselves in a respectful way. From the substantive knowledge of how to follow rules when using tools, to staying safe, to providing children the opportunities to explore their own individual liberty through expressing themselves through the design process, children will see how British Values are interwoven through the whole design and technology curriculum.

Assessment in design and technology

Children will be assessed prior to a unit of design and technology beginning and the lessons will be planned to teach from any misconceptions they may have. This prior knowledge assessment allows children the opportunity to demonstrate any connected knowledge held in their long term memory. They will also be assessed at set intervals after the end of a unit, (2 weeks, 6 weeks and 12 weeks), to recall this knowledge and to ensure that the knowledge has been fully embedded in their long term memory. In addition to this, there will be planned opportunities for recaps throughout the unit to ensure knowledge is retained.

In the academic year 2021-2022, all of the relevant previous year's learning will be included in the knowledge checks in order to mitigate any learning loss due to COVID-19. End of topic assessment takes place approximately two weeks after the end of the topic. Two further knowledge checks take place approximately six weeks and then twelve weeks later in order to ensure that the knowledge is embedded in the children's long term memory.

Termly, the children's work will be moderated by the staff in order to substantiate the class teacher's assessment. Final pieces will be compared and ranked following the same process as the 'No More Marking' system in English. The 'process' undertaken to arrive at the finished pieces will also be taken into account.

Reviewed September 2021