PUCKLECHURCH CE VC PRIMARY SCHOOL

Design and Technology 2026-2027

Intent

Our design and technology (DT) curriculum intends to support our pedagogical principles by:

For our learners at Pucklechurch, design and technology will…	
Nurture social and emotional growth	The design and technology curriculum at Pucklechurch will help to produce effective contributors who can: participate responsibly in political, economic, social and cultural life, have developed informed, ethical views of complex issues and have developed skills to enable them to contribute to solving some of these problems.
Promote metacognition	Design and technology will encourage children to plan, make and evaluate products that solve real and relevant problems within a variety of contexts. The process will encourage children to apply critical thinking in new concepts, take the initiative and lead.
Champion inclusiveness and celebrate differences	Our design and technology curriculum will teach children that everyone can make a difference to the world irrespective of culture, race and background.
Raise aspirations	Through studying design and technology at Pucklechurch, the children will understand that though the design through the design process individuals can explore issues that affect us all and make positive contributions to shape our future. They will experience what it means to be a designer and the associated skills.

To enable the realisation of our intent, as specified in our Curriculum and Pedagogy Guide, we aim to achieve this by creating knowledgeable learners.

Building Knowledge

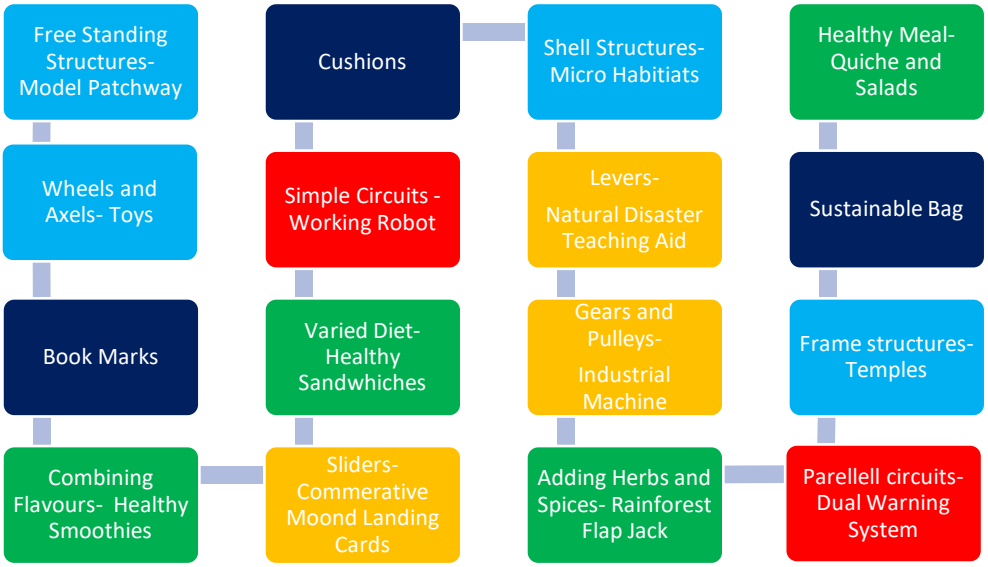
Key Concepts

It is important that when designing products, the children are equipped with the necessary theoretical and practical knowledge to allow them to make informed decisions about their designs. Our Design and Technology Curriculum has been influenced by five main concepts that we revisit throughout the primary. This allows children to make connections and links to previous learning and build knowledge and understanding that is central to them behaving like subject specialists. These concepts are:

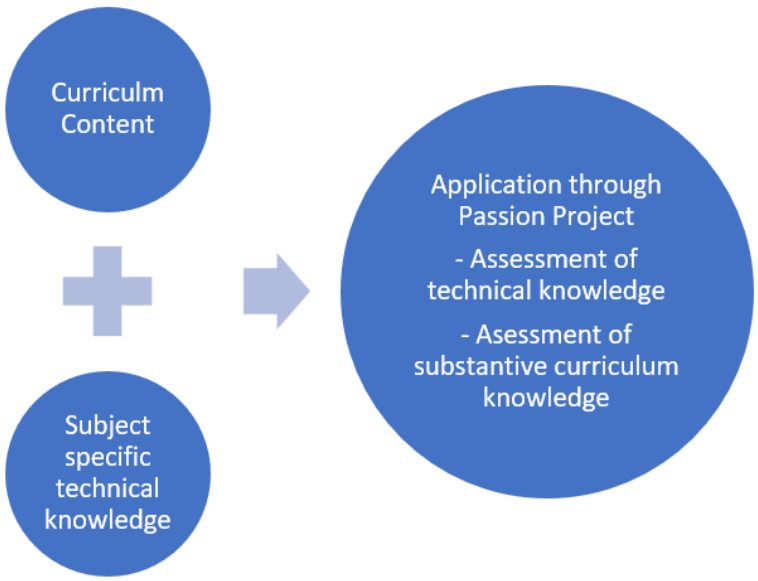


Mapping Substantive Knowledge

The theoretical and practical knowledge within each area has been carefully mapped out so it is progressive across key stages. Teachers know what learning has come before and what learning will come after, enabling them to utilise the knowledge that is in the children's long-term memory.



It is important that children design, plan, make and evaluate products that solve real and relevant problems. With this in mind, we aim to link the children's studies and subsequent design and make projects to themes covered in others areas of our curriculum to give the projects purposeful, authentic contexts. How this has been achieved has been outlined below.



Structures

In Year 1, the Children will learn to use basic construction skills to build free standing structures. Children can use their understanding to build a model village of Pucklechurch linking this to their learning about homes and local area in both Geography and History. Throughout Year 1, children will then continue to experiment with different construction kits and learn how they can make their structures more stable. In lower Key Stage 2, the children build on their prior learning about free standing structures and begin to study shell structures and their purpose of protection, containment and presentation. They will examine the different ways these structures can be strengthened. This knowledge and understanding is developed and applied through the design and construction of environmentally friendly shell structures (inspired by the Eden Project) to protect micro eco-systems. This connects with their science learning about habitats and our ongoing global sustainability theme.

In upper Key Stage two, the children move on to looking a frame structures and the use of beams, columns and foundations as methods of reinforcing. The children will also look at different ways to join materials together. The children will then use what they have learned to design and build a protype of an Ancient Greek temple.

Mechanisms

Children are introduced to the concept of mechanisms through learning that wheels and axles are the part of a vehicle that makes it move. Children will use their own simple mechanism to make a moving toy inspired by their historical studies of toys. They will also be able to use their knowledge of structure to build the chassis. Children are then introduced to the idea of sliders (Year 2) and levers (Lower Key Stage 2) this further enforces that mechanisms are systems that have an input, a process and an output. In Year 2, their inspiration for their design comes from their work on transport where they design and make a commemorative card with a focus on movement. In lower Key Stage 2, the children design and produce a teaching aid using levers and sliders to explain the process of a natural disaster linking to their geographical studies. In upper Key Stage 2 the children will look at how mechanical systems such as pulleys or gears create movement. They will look at different inventions linked to their studies on the industrial revolution and then design and make a prototype of their own invention used to make machinery safer.

Food and Nutrition

Throughout their studies of food and nutrition, children will be able to connect their learning to science and personal social health education studies to reinforce the importance of healthy eating. In Key Stage 1 they begin to recognise the different sources of food with a particular focus on growing fruit and vegetables. They will get practical experience of growing these foods through making crudities and dip in Year 1 and then In Year 2 creating smoothies, which also teaches them about combining foods and flavours. Through the design process the children will learn the importance of fruit and vegetables as components of a healthy diet and through making products the children will learn how to clean and prepare the food safely. In Year 3 the children will start by reconnecting with their learning from Year 2 and continue to think about healthy eating. They will also look in greater depth at other sources of food like meat. They will link to their learning of Ancient Egypt and study the harvesting of grain and bread making processes. Through the subsequent project of making a healthy pizza the children will be able to link all of their learning together. In upper Key Stage 2 the children will study how recipes can be further adapted through the addition of spices and herbs. They will learn which plants these herbs come from and where they grow in the world. As many of these spices and herbs are not grown in the UK naturally they will consider the sustainability aspects of

growing foods out of season or climate and design a crumble that is inspired by spices from the rainforest yet sustainably sourced. This all leads up to the children in Year 6 designing and making a healthy meal involving a quiche and salad that they serve to their parents and carers as part of their transition programme.

Textiles

Children begin by learning about different fabrics; understanding that some fabrics are natural whilst others are synthetic linking to their work in science. They are introduced to stitching through learning how a running stitch can be used for decorative purposes and design and make a book mark. In lower KS2, children build on this knowledge and begin to learn about a wider range of stitches and how they can be used to join materials together. They learn what an applique is and how this can contribute to the aesthetics of a design. They learn how designers' aesthetic choices are often dependent on culture and this is the inspiration for their cushion design linking to our driver of diversity. In Upper Key Stage 2, the focus is on aesthetics and how to make products more appealing to the user. This is linked to their transition programme where they have to use recycled fabrics to make a bag for their use in secondary school.

Electrical systems

Closely linked to their study of electricity in science, children in Key Stage 2 will also design and make electrical products. Designing and making these products will give the children opportunity to re enforce the knowledge they have learned in science. In Lower Key Stage 2, they will design a product that uses a simple circuit and one type of switch whereas in upper Key Stage 2 the children will use their scientific knowledge to create a more complex circuit that has two output devices controlled by separate switches. The product will be dual warning system linked to their studies of the air raid siren.

Building Disciplinary Knowledge

Design Process

To be successful designers, children need to use their existing substantive knowledge to learn disciplinary knowledge through the design process. In order for the children to acquire the disciplinary knowledge we have designed a process that encourages the practical application of this knowledge. The design process has been split into five main stages.

Design Process

Find a Purposeful, Authentic Context

- Home
- School
- Natural Enivronment
- Leisure
- Culture
- Business and Industry
- Character Education
- Other Curriculum Areas
- School Values or Drivers

Developing Knowledge

- Activate cchema and making conscious connections to previous learning
- Introduce explicit knowledge through:
  - Dual Coding
  - Small Steps
  - Exploring existing products
- Make knowledge stick through activities that encourage recall and repetition of knowledge
- Practice theoretical and practical knowledge

Design

- Use of a design criteria
- Generate ideas through research
- Sketch and model ideas
- Clear rationale for choices

Plan

Use substantive knowledge to choose the best: materials, procedures, processes, components and tools to make the product

Make

- Identify and follow safety procedures
- Measure components accuratley
- Combine and join components

Evaluate

- Identify strengths, weakness and areas of developmnet of thier product in reference to the orginal design criteria

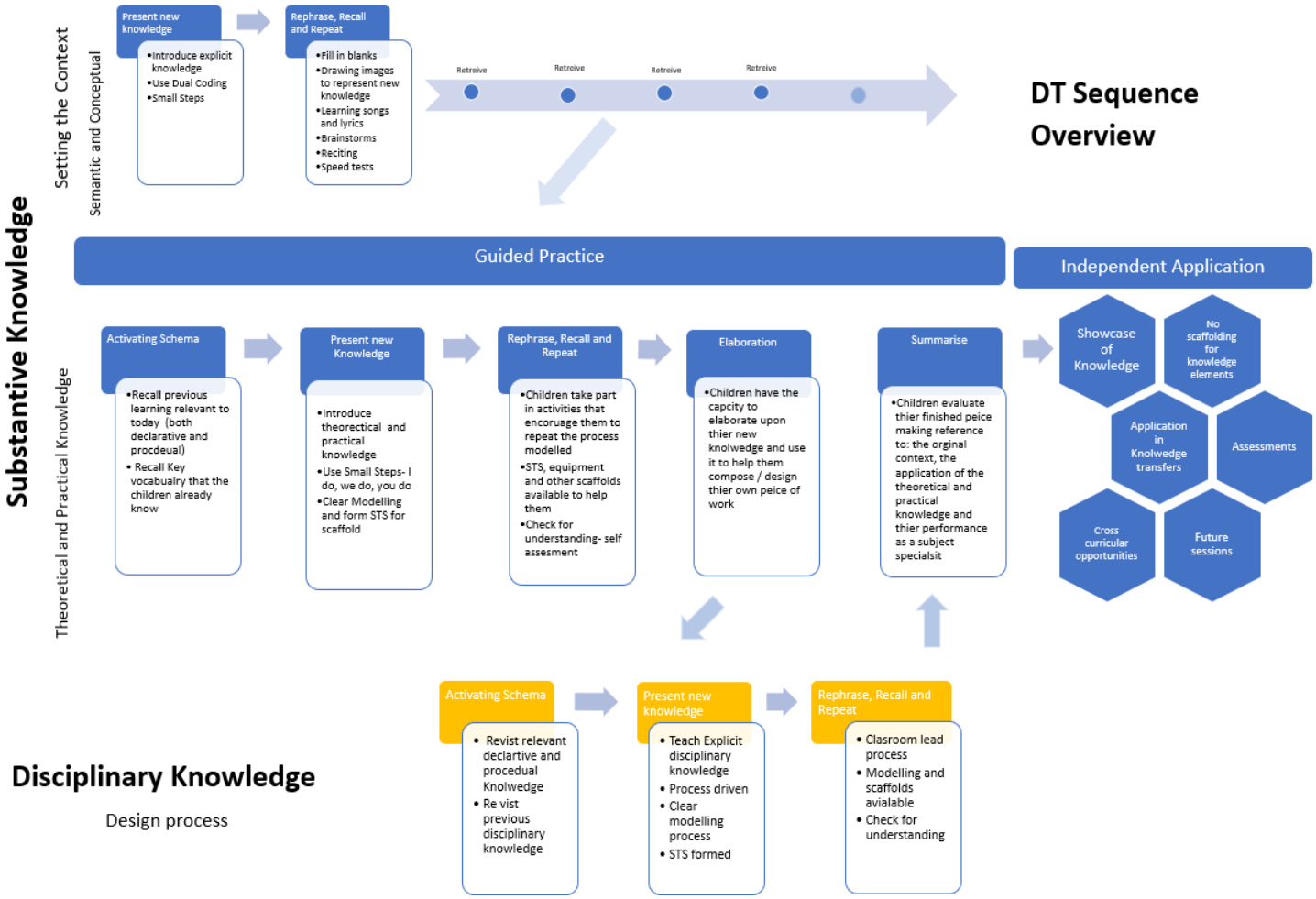
In order for children to acquire the disciplinary knowledge our design process is explicit with the disciplinary knowledge we want the children to know. The disciplinary knowledge that children need to acquire at each stage of the process has been mapped out to ensure it is progressive across the phases.

Design process	Key Stage one	Lower Key Stage two	Upper Key Stage two
Developing Knowledge	Designers have knowledge linked to the products they are making Designers explore existing products Designers disassemble existing products and can identify that there are different components Designers evaluate and analyse existing products	Designers have knowledge linked to the products they are making Designers explore products, systems and the work of others. Designers disassemble existing products and identify and name the different components Designers evaluate and analyse existing products	Designers have specific knowledge linked to the products they are making Designers explore products, systems and the work of others. Designers disassemble existing products and identify the purpose of different components Designers evaluate and analyse existing products and can identify what makes the product successful
Designing	Designers use simple design criteria to help develop their ideas Designers say whether their products are for themselves or other users and how they are suitable Designers generate ideas by drawing on their own experiences Designers develop and communicate ideas by talking and drawing Designers model ideas by exploring materials Designers state what products they are designing and making and what they are for	Designers develop their own design criteria and use these to inform their ideas Designers indicate the design features of their products that will appeal to intended users Designers gather information about the needs and wants of particular individuals and groups and use this to generate ideas Designers share and clarify ideas through discussion Designers use annotated sketches Designers describe the purpose of their products with reference to the original design criteria	Designers develop a simple design specification to guide their thinking Designers identify the needs, wants, preferences and values of particular individuals and groups Designers carry out research, using surveys, interviews, questionnaires and web-based resources and use this to generate ideas Designers share and clarify ideas through discussion Designers use cross-sectional drawings and exploded diagrams to develop and communicate their ideas Designers describe and explain how particular parts of their products will work and how it meets the design specification
Planning	Designers plan by suggesting what to do next Designers select from a range of tools and equipment, explaining their choices Designers select from a range of materials and components according to their characteristics	Designers model their ideas using prototypes Designers order the main stages of making Designers select materials, components, tools and equipment suitable for the task and explain this	Designers model their ideas using prototypes Designers formulate step-by-step plans as a guide to making Designers explain their choice of materials and components according to functional properties and aesthetic qualities. Designers explain their choice of tools and equipment in relation to the skills and techniques they will be using.
Making	Designers follow procedures for safety and hygiene Designers measure, mark out, cut and shape materials and components Designers assemble, join and combine materials and components	Designers follow procedures for safety and hygiene Designers measure, mark out, cut and shape materials and components with some accuracy Designers assemble, join and combine materials and components with some accuracy	Designers identify and then follow procedures for safety and hygiene Designers accurately measure, mark out, cut and shape materials and components Designers accurately assemble, join and combine materials and components
Evaluating	Designers talk about their design ideas and what they are making Designers suggest how their products could be improved Designers make simple judgements about their products and ideas against design criteria	Designers identify the strengths and areas for development in their ideas and products Designers use their design criteria to evaluate their completed products	Designers critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make Designers use their design specification to evaluate their completed product

Disciplinary Knowledge -Whole School Overview

Lesson Sequence

As outlined in our Curriculum and Pedagogy Guide, we believe that developing children's substantive knowledge is key in enabling them to engage in subject specific thinking. Our framework for teaching sequence has been adapted for DT in the following way:

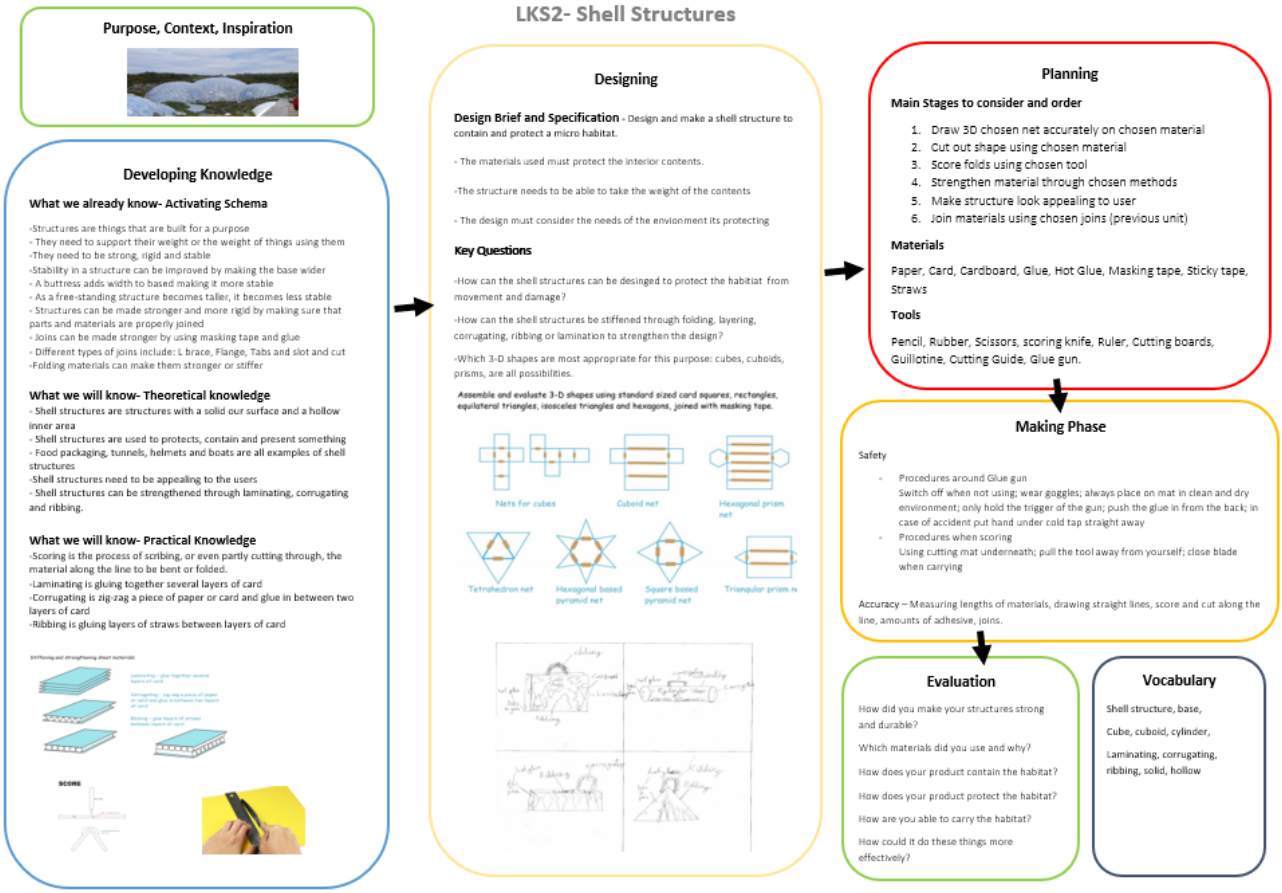


Knowledge Organisers

Each design and make task has its own individual knowledge organiser which guides the teacher through each stage of the design process and explicitly tells the teacher;

- What the purpose and context for the design is
- What substantive knowledge the children already have
- What substantive knowledge the children will be taught (both theoretical and practical)
- What the design brief and specification is and the key questions the children should consider when they are designing
- What the main stages are for children to consider when planning the project and the materials and tools that are required
- The safety and accuracy foci during the making stage
- The evaluation questions the children can use to assess their product against the original criteria.

Pucklechurch CE VC Primary School



Example Knowledge Organiser for Shell Structures Design and Make Task