Design & Technology Rationale

God's Love in Action

Our children are at the heart of everything we do through **Christian values and relationships**. **Living and learning together** we celebrate the uniqueness and diversity of everyone in our family. We nurture a sense of **self belief, mutual respect and belonging** through Social Emotional Learning and academic excellence. We are dedicated to building the foundations for **happy and successful life-long learning**.

Contents

1. Curriculum Vision

We have purposefully chosen CUSP Design and Technology around the principles of evidence-led practice. This is to ensure that pupils are equipped to successfully think, work, and communicate like a designer. Unapologetically ambitious, our curriculum focuses on excellence in this subject through a range of disciplines and by referencing outstanding practitioners in this field. The intention is that through exceptional teacher instruction we inspire pupils to acquire knowledge as designers and technologists and enables them to skilfully apply their understanding.

2. National Curriculum

Design and technology is an inspiring, rigorous, and practical subject. 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. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing, and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising, and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth, and well-being of the nation.

Aims: The national curriculum 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 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.

Key Stage 1

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making.

When designing and making, pupils should be taught to:

Design: design purposeful, functional, appealing 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, information and communication technology

Make: select from and use a range of tools and equipment to perform practical tasks. Select from and use a wide range of materials and components, including construction materials, textiles, and ingredients, according to their characteristics.

Evaluate: explore and evaluate a range of existing products, evaluate their ideas and products against design criteria

Technical knowledge: build structures, exploring how they can be made stronger, stiffer, and more stable. Explore and use mechanisms in their products.

Key stage 2

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making.

When designing and making, pupils should be taught to:

Design: use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at individuals or groups**.** Generate, develop, model, and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.

Make: select from and use a wider range of tools and equipment to perform practical tasks. 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.

Evaluate: investigate and analyse a range of existing products. Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. Understand how key events and individuals in design and technology have helped shape the world.

Technical knowledge: apply their understanding of how to strengthen, stiffen and reinforce more complex structures. Understand and use mechanical systems in their products. Understand and use electrical systems in their products. Apply their understanding of computing to program, monitor and control their products.

3. Intent

The CUSP Design and Technology curriculum is organised into blocks with each block covering a particular set of disciplines, including food and nutrition, mechanisms, structures, systems, electrical systems, understanding materials and textiles. Vertical progression in each discipline has been deliberately woven into the fabric of the curriculum so that pupils revisit key disciplines throughout their Primary journey at increasing degrees of challenge and complexity. In addition to the core knowledge required to be successful within each discipline, the curriculum outlines key aspects of development in the Working as a Designer section. Each module will focus on promoting different aspects of these competencies. This will support teachers in understanding pupils' progress as designers more broadly, as well as how successfully they are acquiring the taught knowledge and skills.

4. Implementation

Working as a Designer			
Design	**Make**	**Evaluate**	**Apply**
The art or process of deciding how something will look or work.	Create something by combining materials or putting parts together.	Form an opinion of the value or quality of something after careful thought.	Use something or make something work in a particular situation.

CUSP Design and Technology includes a sequence of skeleton lesson plans, contextual reference materials, vocabulary modules focusing on language of emotion, explanatory videos, and annotated exemplifications. The teacher videos complement the content in each block and provide clear instruction about relevant techniques, skills, and methods. The exemplifications can be used to inform assessment of pupil outcomes and to support teachers in developing their own subject knowledge. Teachers are also provided with a list of materials and resources that they will need to deliver each block. The components of the suite should be viewed together for maximum impact. Central to the learning

modules are activities designed to develop pupils' oracy and vocabulary skills to enable them to use the language associated with design and technology meaningfully when talking about their work and the work of others. An overview of the core content provides information about the skills covered across the term in each year group. This allows teachers to see the progression of skills included within each aspect of design and technology.

1	**Core discipline:** Mechanisms **Key Concept:** Sliders and levers	**Core discipline:** Structures **Key Concept:** Freestanding structures	**Core discipline:** Food and Nutrition **Key Concept:**	**Core discipline:** Understanding Materials **Key Concept:** Selecting materials **CUSP link: Materials**	**Core discipline:** Textiles **Key Concept:** Joining techniques **CUSP link: Hot and cold places**	**Core discipline:** Food and Nutrition **Key Concept:**
2	**Core discipline:** Textiles **Key Concept:** Exploring shape using a template	**Core discipline:** Food and Nutrition **Key Concept:** **CUSP link: Animals, including humans (Keeping healthy)**	**Core discipline:** Mechanisms **Key Concept:** Axles and wheels	**Core discipline:** Understanding Materials **Key Concept:** Manipulating materials **CUSP link: Use of everyday materials**	**Core discipline:** Food and Nutrition **Key Concept:**	**Core discipline:** Structures **Key Concept:** Developing strength in structures
3	**Core discipline:** Textiles **Key Concept:** Stiffening and strengthening fabric	**Core discipline:** Food and Nutrition **Key Concept:** **CUSP link: Animals, including humans**	**Core discipline:** Mechanisms **Key Concept:** Levers and linkages **CUSP link: Forces and magnets**	**Core discipline:** Food and Nutrition **Key Concept:**	**Core discipline:** Systems **Key Concept:** How things are powered	**Core discipline:** Structures **Key Concept:** Spanning gaps
4	**Core discipline:** Food and Nutrition **Key Concept:**	**Core discipline:** Mechanisms **Key Concept:** Hinges	**Core discipline:** Textiles **Key Concept:** Fixings and fastenings	**Core discipline:** Structures **Key Concept:** Designing structures using a frame to make them stronger and sturdier	**Core discipline:** Electrical Systems **Key Concept:** Switches and circuits revisited **CUSP link: Electricity**	**Core discipline:** Food and Nutrition **Key Concept:** **CUSP link: Animals, including humans (Digestion)**
5	**Core discipline:** Food and Nutrition **Key Concept:**	**Core discipline:** Systems **Key Concept:** Greener power	**Core discipline:** Textiles **Key Concept:** Durability of fabric	**Core discipline:** Mechanisms **Key Concept:** Pulleys and gears **CUSP link: Forces**	**Core discipline:** Structures **Key Concept:** Developing structures that are fit for purpose and design	**Core discipline:** Food and Nutrition **Key Concept:** **CUSP link: World countries**
6	**Core discipline:** Food and Nutrition **Key Concept:**	**Core discipline:** Mechanisms **Key Concept:** Pulleys and gears	**Core discipline:** Food and Nutrition **Key Concept:**	**Core discipline:** Structures **Key Concept:** Designing structures revisited – combining skills and knowledge	**Core discipline:** Electrical Systems **Key Concept:** Complex switches and circuits **CUSP link: Electricity**	**Core discipline:** Textiles **Key Concept:** Sustainable materials

5. Impact and assessment

The assessment of pupils is formative and is based on pupil outcomes and questioning from each lesson.

The following can be used to assess pupils' knowledge and application of skills and techniques as well as their understanding and use of relevant vocabulary.

• Expectations for each block are made explicit on slide one, e.g. At the end of this block pupils will know how to waterproof cotton fabric and which fabrics are both functional and hardwearing.

• The Point of reflection section specifies the expected outcomes for each lesson.

• The Questions for assessment section in each block provides specific questions to be used with pupils to elicit their level of understanding of tools, techniques, and effects, e.g. How have the properties of the cotton changed? Is the cotton now more or less functional?

• The Oracy and Vocabulary tasks provide ample opportunities for teachers to evaluate pupils' ability to: - use the language of design and technology effectively; - explain techniques, skills, and processes; - evaluate their own and others' work.

• The vocabulary quiz provides an opportunity for teachers to assess pupils' deeper understanding and application of the technical vocabulary covered in the block.

• The exemplifications demonstrate the expected standard against which teachers can assess pupils' work. The best form of assessment in design and technology is at the point of delivery, while pupils are working. This helps us to understand pupils' development as designers, rather than their ability to produce a prescribed end outcome. By encouraging pupils to articulate their thinking and reflections, we can understand which aspects of design and technology may require additional teaching and reshape teaching to support this.

Reasonable adjustments for pupils with SEND

As part of the planning and preparation for the delivery of each block, teachers will need to consider how specific activities, or the delivery, may need to be adjusted to ensure that pupils with SEND are able to access the materials and participate fully in the lesson.

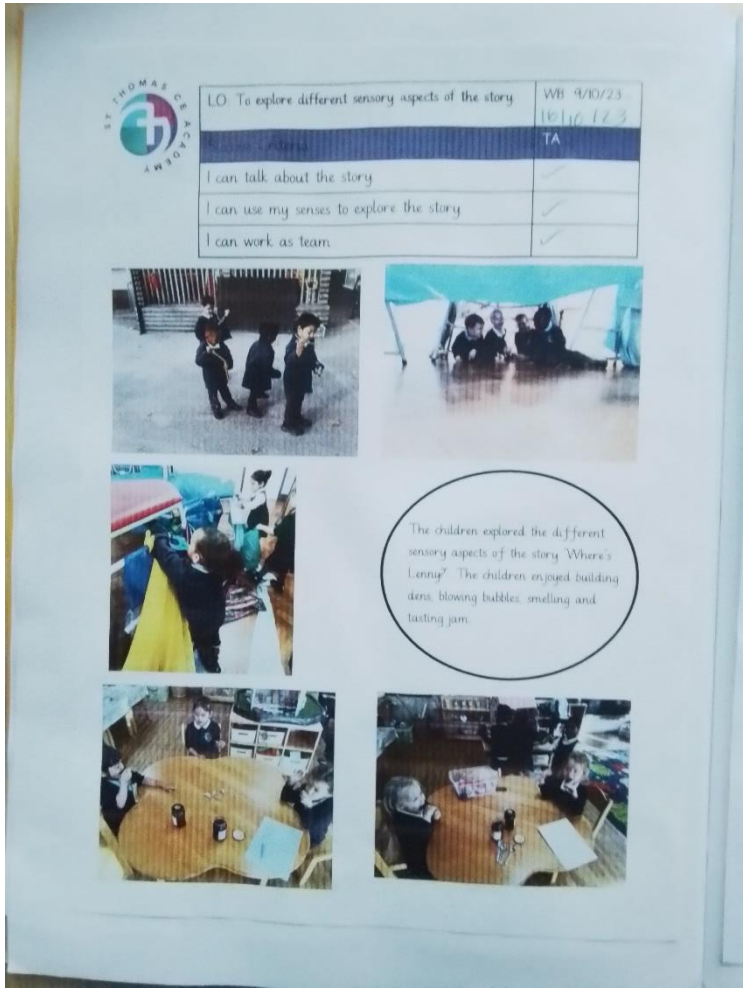
Pupils with language and communication difficulties (including those with ASD) may need additional visual prompts to help them understand what is expected of them. The task could be broken down into smaller, more manageable chunks and individual task boards used to demonstrate these.

Some pupils may have sensory sensitivities. For those pupils, adjustments may need to be made for them to access materials. Pupils who have difficulties with tasks requiring fine motor skills may need appropriate adjustments to be made to enable them to access the task and / or to keep them safe.

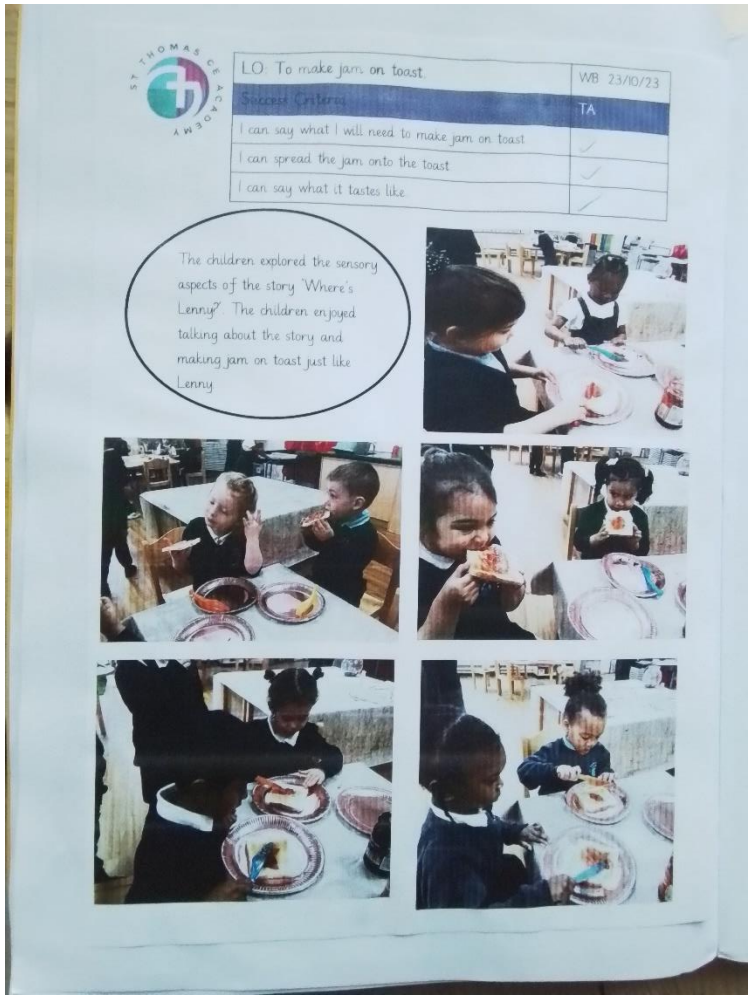
Health and safety

The blocks highlight key tools, techniques, and tasks for which potential risks need to be carefully managed. Regarding food and nutrition, all staff involved in teaching and supporting these lessons have completed a basic certificate in food hygiene. This is obtained through the National College association which is completed online. A record is kept online of all staff who have completed the training.

EYFS



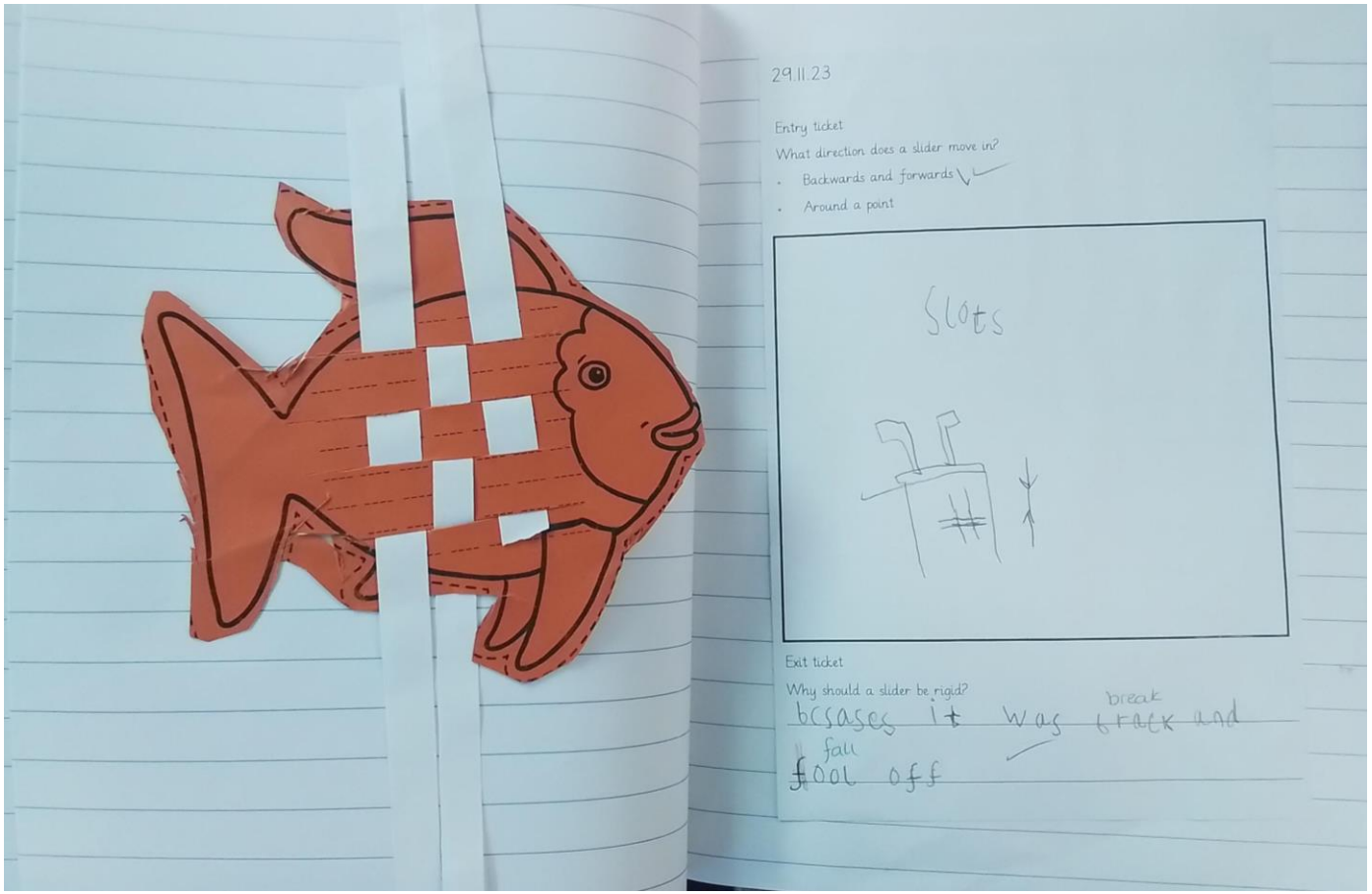
EYFS LO: To explore different materials and build a den



EYFS LO: To make jam on toast following steps.

Design & technology Rationale

Year One



Y1 LO: To create a slider which moves in different directions

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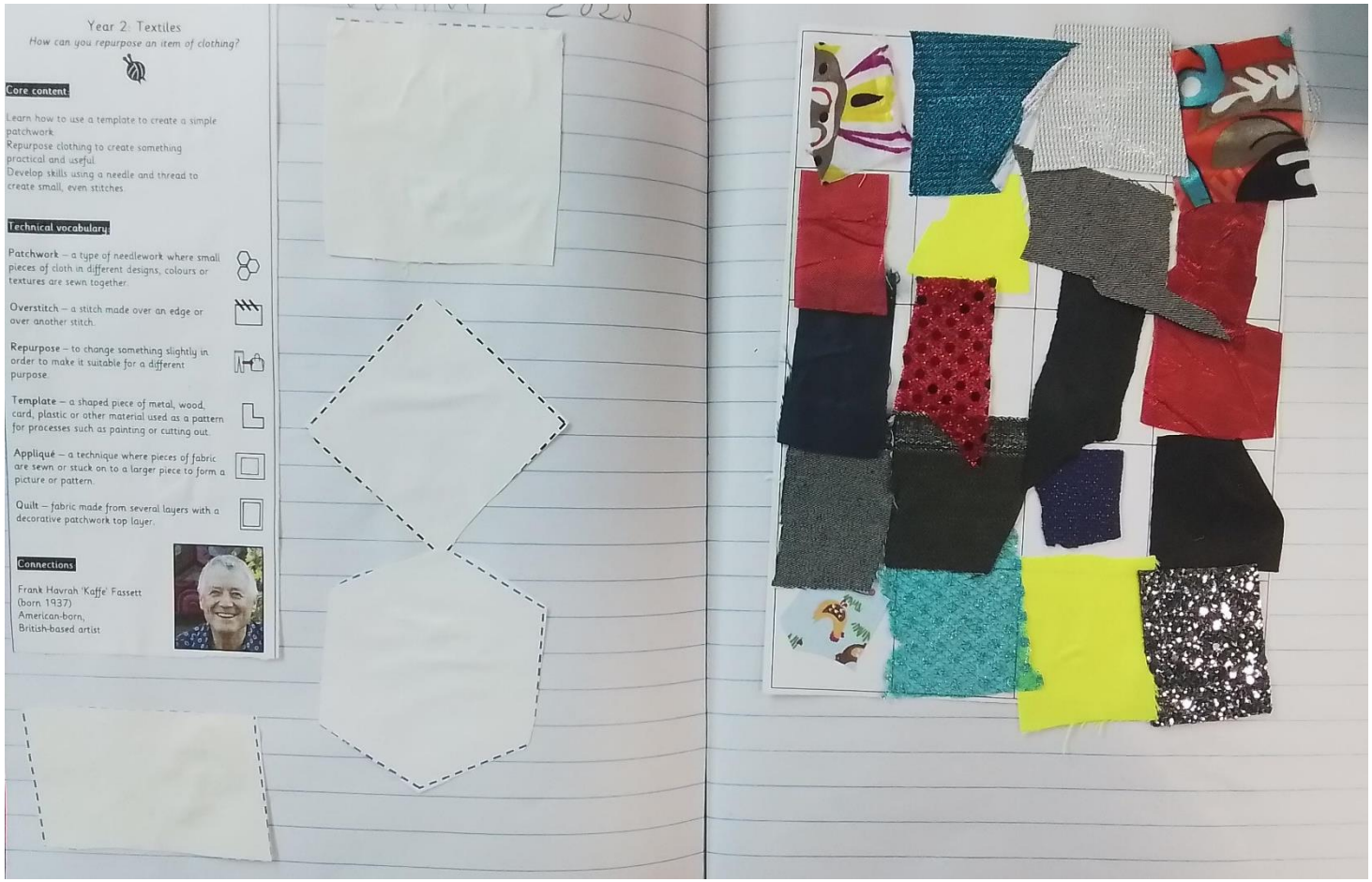
Year Two



Y2 LO: To repurpose fabric and create a patchwork.

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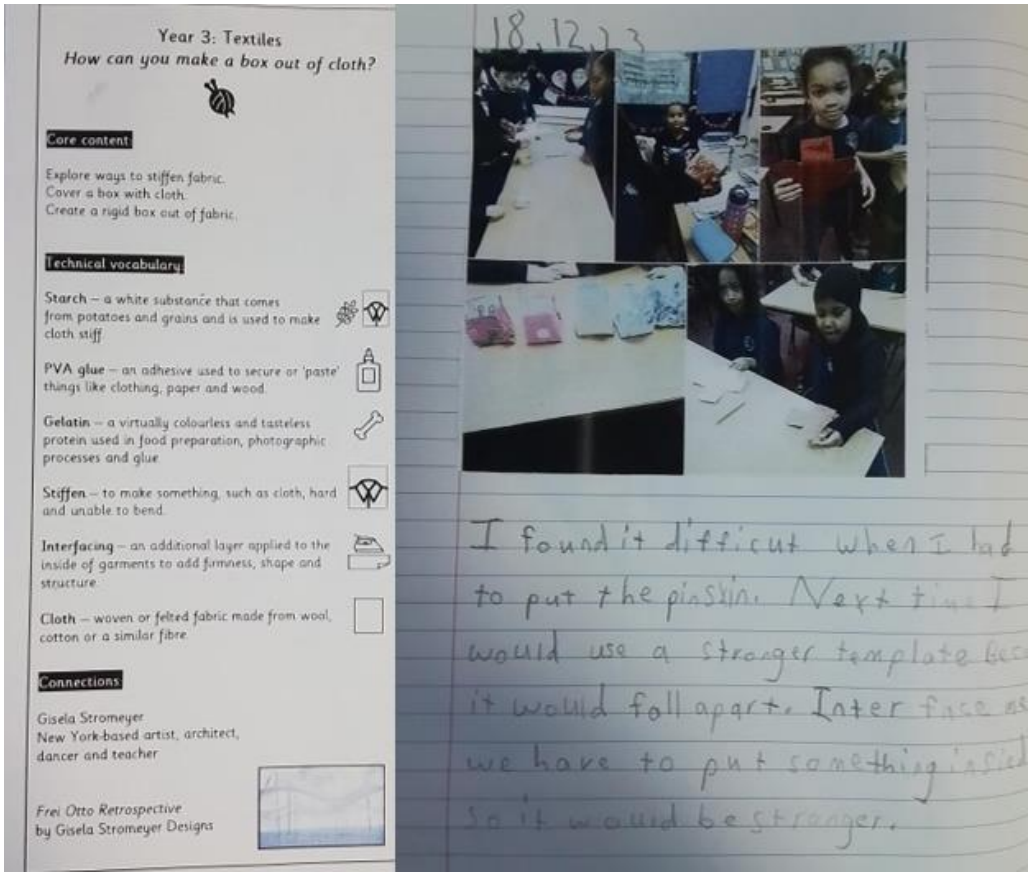
Year Three



Year 3: Textiles

How can you make a box out of cloth?

Core content

Explore ways to stiffen fabric.
Cover a box with cloth.
Create a rigid box out of fabric.

Technical vocabulary

Starch – a white substance that comes from potatoes and grains and is used to make cloth stiff.

PVA glue – an adhesive used to secure or 'paste' things like clothing, paper and wood.

Gelatin – a virtually colourless and tasteless protein used in food preparation, photographic processes and glue.

Stiffen – to make something, such as cloth, hard and unable to bend.

Interfacing – an additional layer applied to the inside of garments to add firmness, shape and structure.

Cloth – woven or felted fabric made from wool, cotton or a similar fibre.

Connections

Gisela Stromeyer
New York-based artist, architect, dancer and teacher

Frei Otto Retrospective
by Gisela Stromeyer Designs

18.12.23

I found it difficut when I had to put the pinstin. Next time I would use a stronger template bec it would fall apart. Inter face as we have to put something insid so it would be stronger.

Y3 LO: To explore how materials stiffen and create structures

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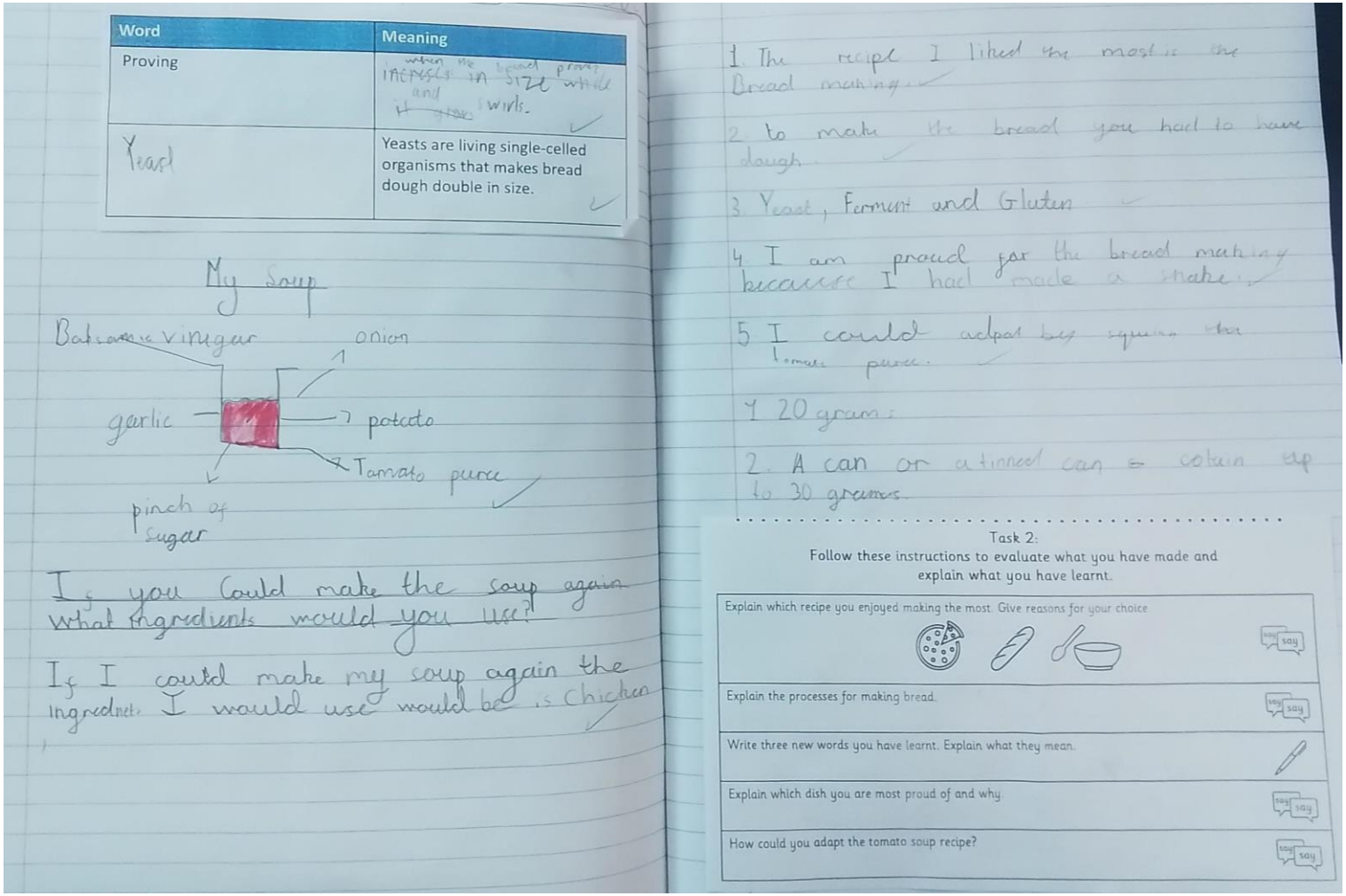
Year Four



Word	Meaning
Proving	when the bread proves it increases in size until and it rises.
Yeast	Yeasts are living single-celled organisms that makes bread dough double in size.

My Soup

If you could make the soup again what ingredients would you use?

If I could make my soup again the ingredient I would use would be is Chicken

1. The recipe I liked the most is the Bread making.
2. to make the bread you had to have dough.
3. Yeast, Ferment and Gluten
4. I am proud for the bread making because I had made a shape.
5. I could adpat by using the tomato puree.

1. 20 grams
2. A can or a tinned can = cotain up to 30 grams.

Task 2:
Follow these instructions to evaluate what you have made and explain what you have learnt.

Explain which recipe you enjoyed making the most. Give reasons for your choice
Explain the processes for making bread.
Write three new words you have learnt. Explain what they mean.
Explain which dish you are most proud of and why
How could you adapt the tomato soup recipe?

Y4 LO: To evaluate my soup and bread and explain what I have learnt.

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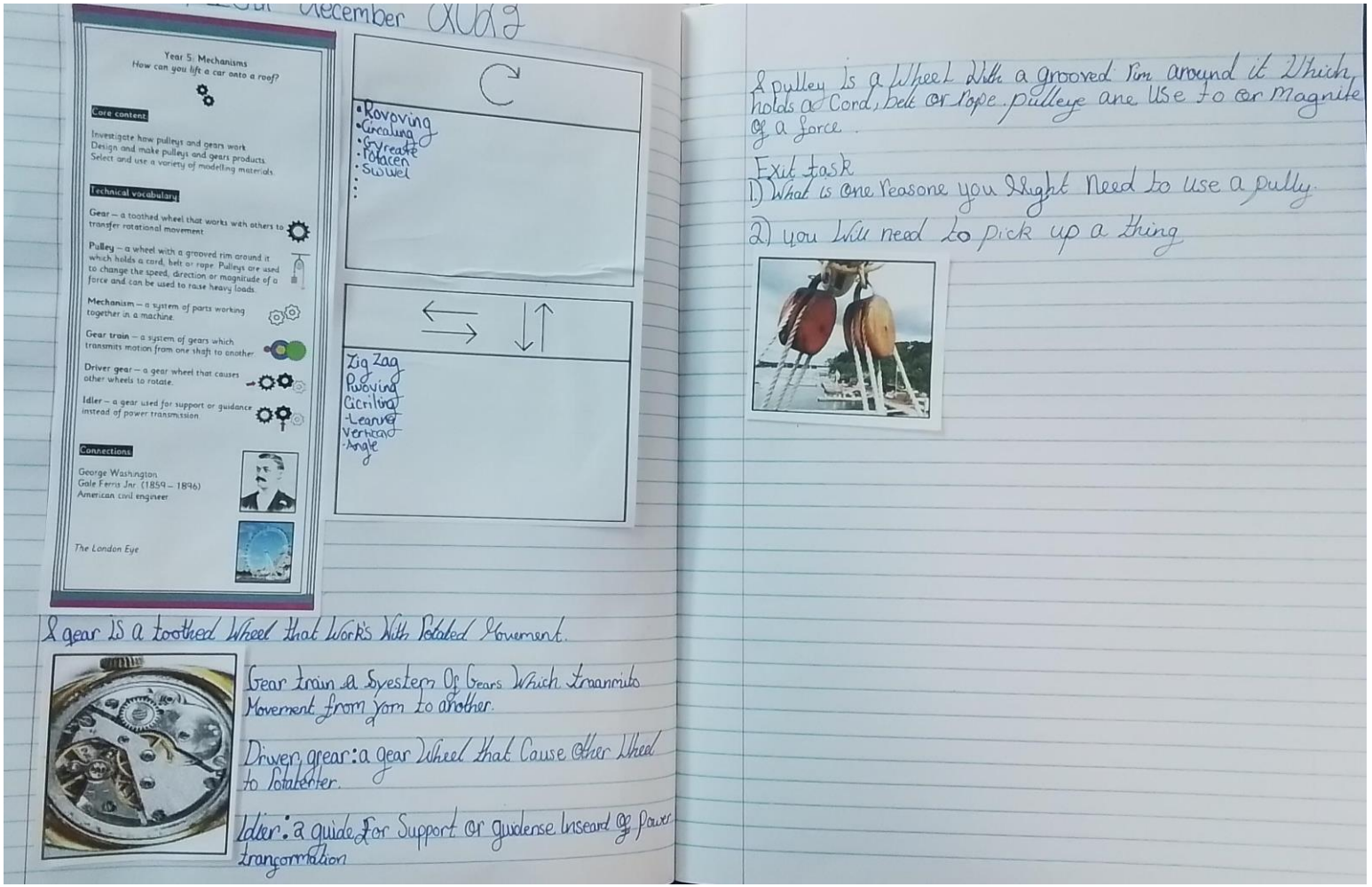
Year Five



Y5 LO: To identify how gears, drivers and pulleys can be used to lift objects.

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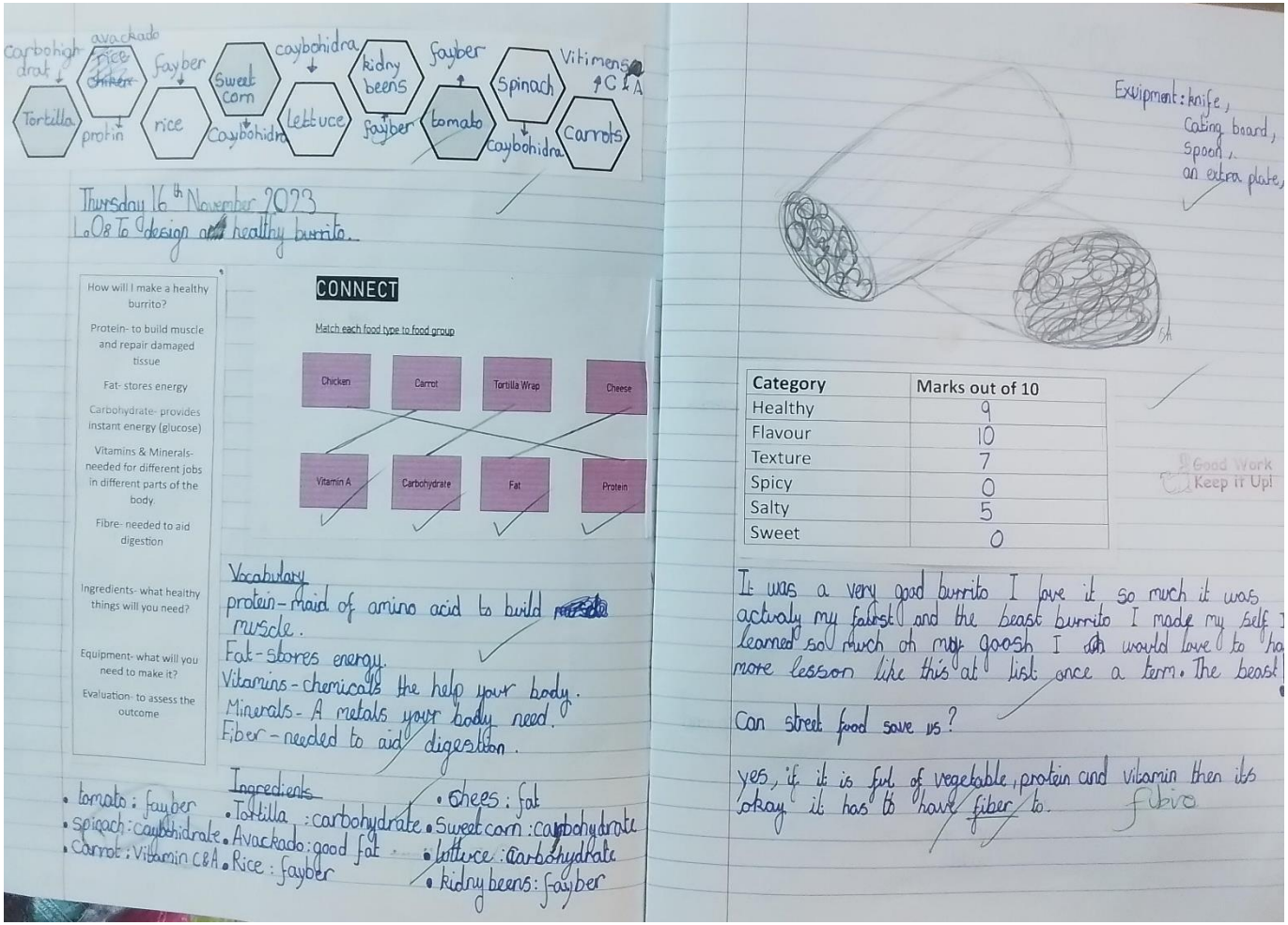
Year Six



Y6 LO: To examine healthy foods to create a healthy burrito.

Design & technology Rationale

6. Staff CPD

All teaching staff receive 1:1 instructional coaching, delivered by a trained coach from the senior leadership team. These fortnightly meetings follow a programme based around cognitive load theory and quality first teaching. Staff questionnaires and audits are completed at two points in a year, to signpost subject knowledge support. Subject leaders have a 1:1 session, each half term, with senior leaders, to develop action plans and support for their curriculum area. Teachers also receive 1:1 coaching with either the subject lead or our lead practitioner in planning and delivering a science unit.

Teachers are provided with:

- CUSP art planning, CPD videos and planning
- Resources to match the units of work.
- CPD 1:1 session with SLT and lead practitioner
- Work alongside the subject leader on units of work