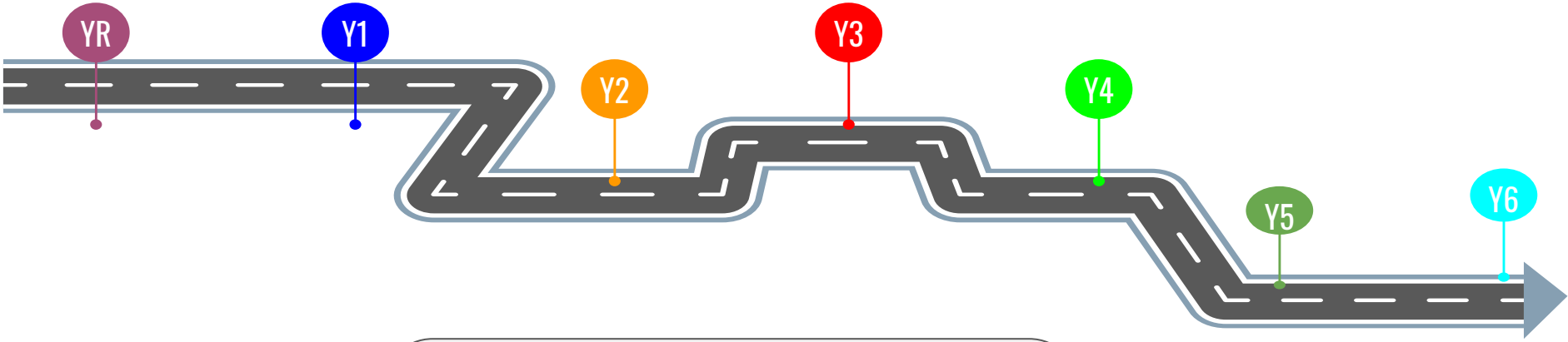
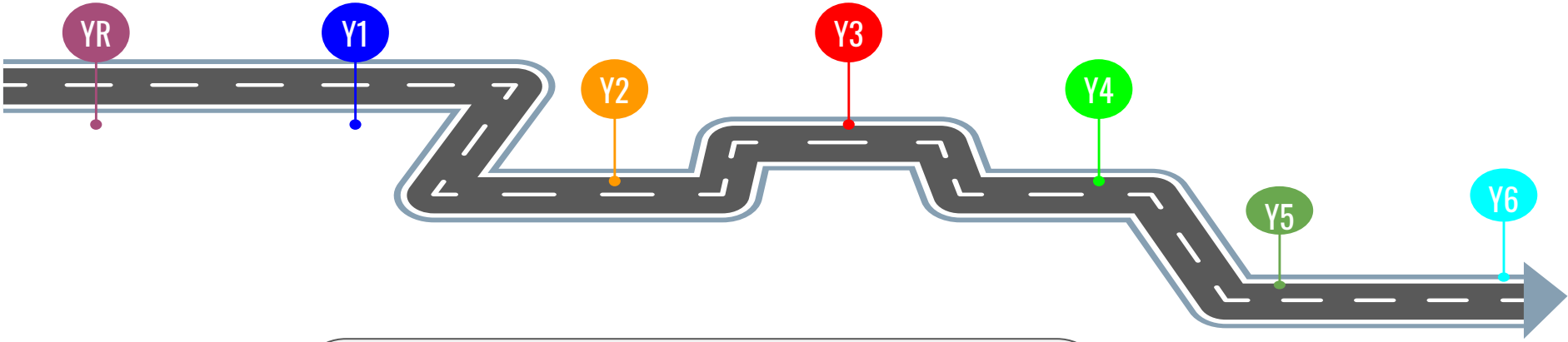
Houghton Primary School: DT



DT

CURRICULUM

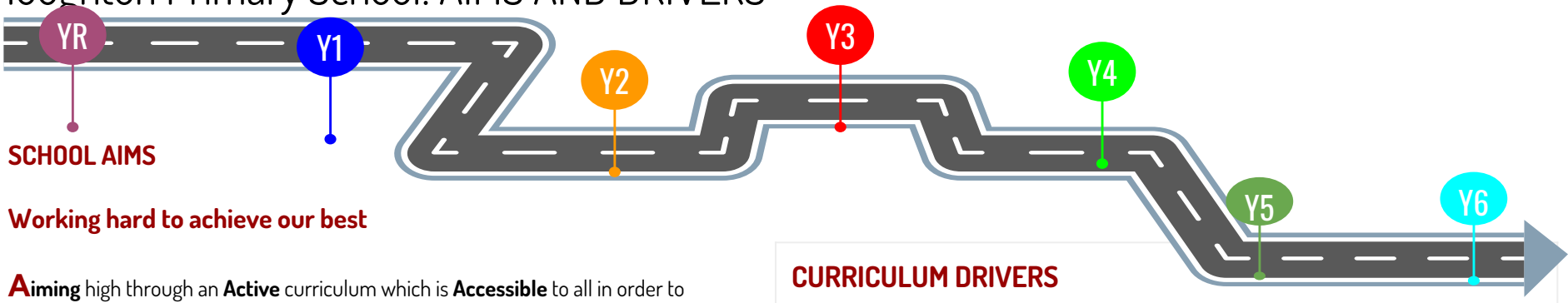
Houghton Primary School: DT



DESIGN & TECHNOLOGY

CURRICULUM **INTENT**

Houghton Primary School: AIMS AND DRIVERS



SCHOOL AIMS

Working hard to achieve our best

Aiming high through an **Active** curriculum which is **Accessible** to all in order to **Achieve** the very best that we can

Challenging ourselves within a culture of **Care, Cooperation** and **Community**

Helping each other to achieve within a **Happy, Healthy** and **Hard-working** environment

Inspiring others to be **Independent, Involved** and ever **Improving**

Expecting the very best of ourselves and others and always aiming to be **Excellent** in all that we do

Valuing every individual and providing **Varied** learning experiences

Encouraging everyone through our **Enthusiasm** and **Eagerness** to be our very best

CURRICULUM DRIVERS

Oracy to place speech and communication at the heart of our curriculum enabling our children to speak confidently, appropriately and sensitively, learning through talk and deepening understanding through dialogue.

Diversity to develop our children's appreciation and understanding of a variety of cultures and lifestyles, engendering equality and challenging bias

Community to see ourselves as an integral part of the local, national and global community

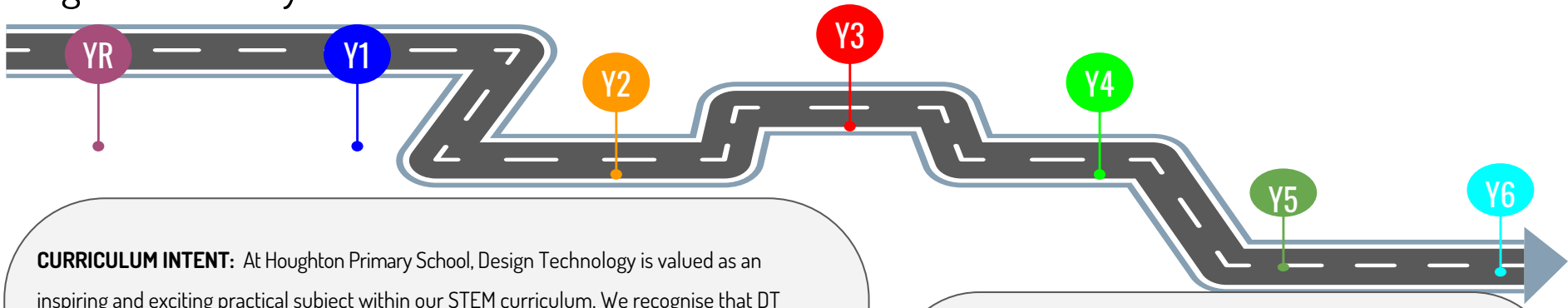
Environment to foster a passion for both the local and global environment and take responsibility for its care

Enquiry to encourage our children to be inquisitive, to ask questions and be resourceful. Our children will be persistent and independent in their learning.

Risk To encourage our children to learn to assess and manage risks by having fun and stepping outside their comfort zones

Enterprise to support our children in developing more independence and the opportunity to show initiative

Houghton Primary School: DT



CURRICULUM INTENT: At Houghton Primary School, Design Technology is valued as an inspiring and exciting practical subject within our STEM curriculum. We recognise that DT creates many exciting opportunities for our pupils to develop interpersonal skills, become critical thinkers and to take risks, both independently and as members of a team.

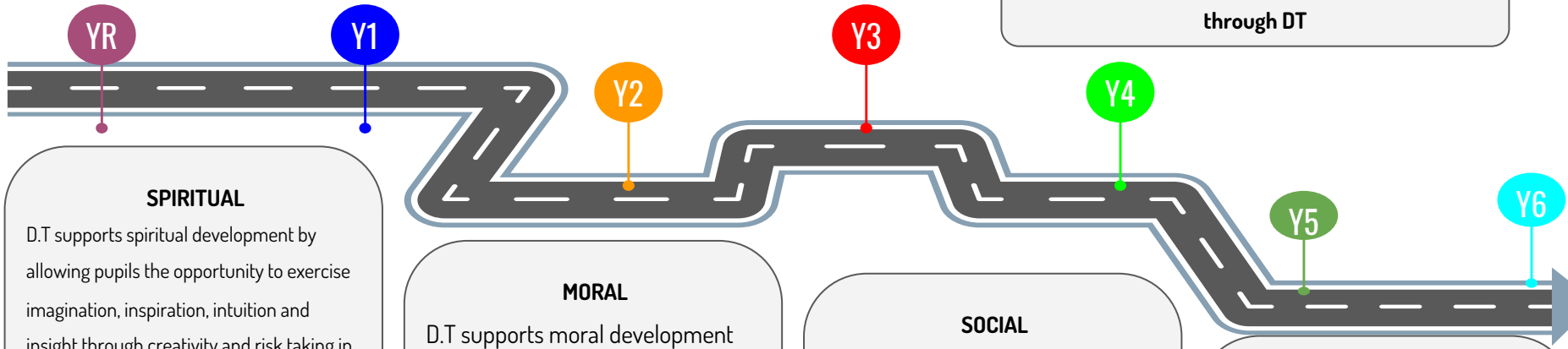
Our school curriculum drivers of oracy and enquiry are central to our approach to DT. Pupils are encouraged to intervene supportively and eloquently in the development of each others products and to review their own work in light of feedback and review from their peers. We aim for our pupils to have the resilience to value such feedback and the determination to overcome any practical challenges they may encounter.

Through stepping back, we allow pupils to use their initiative to solve problems and take risks. To make the learning meaningful, we make relevant links within the wider school curriculum, or to the children's interests, when appropriate. We wish for our curriculum to inspire and empower our students to become independent, confident, creative and reflective designers, innovators and engineers of the future.

NC PURPOSE OF STUDY: 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.

Houghton Primary School: DT

Spiritual, Moral, Social and Cultural Development through DT



SPIRITUAL

D.T supports spiritual development by allowing pupils the opportunity to exercise imagination, inspiration, intuition and insight through creativity and risk taking in analysing, designing and manufacturing a range of products. It instils a sense of awe, wonder and mystery when studying the natural world or human achievement. Encouraging creativity allows pupils to express innermost thoughts and feelings and to reflect and learn from reflection, for example, asking 'why?', 'how?' and 'where?'.

MORAL

D.T supports moral development by raising awareness of the moral dilemmas by encouraging pupils to value the environment and its natural resources and to consider the environmental impact of everyday products. It educates pupils to become responsible consumers.

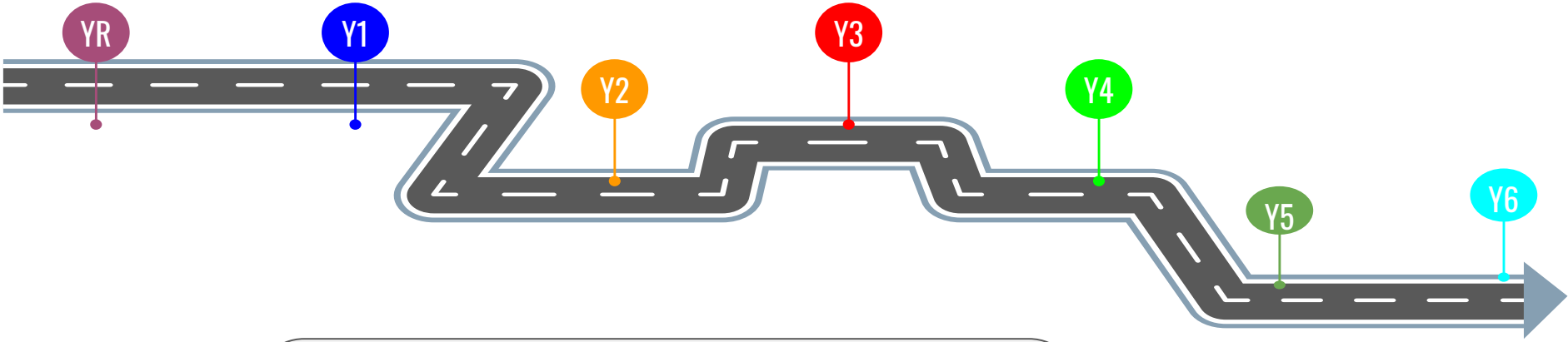
SOCIAL

D.T Supports social development by providing opportunities to work as a team, recognising others' strengths and sharing equipment. Design Technology promotes equality of opportunity and provides an awareness of areas that have gender issues e.g. encouraging girls to use equipment that has been traditionally male dominated.

CULTURAL

D.T supports cultural development by encouraging children to reflect on ingenious products and inventions, the diversity of materials and ways in which design technology can improve the quality of life. It investigates how different cultures have contributed to technology and reflects on products and inventions, the diversity of materials and ways in which design can improve the quality of our lives.

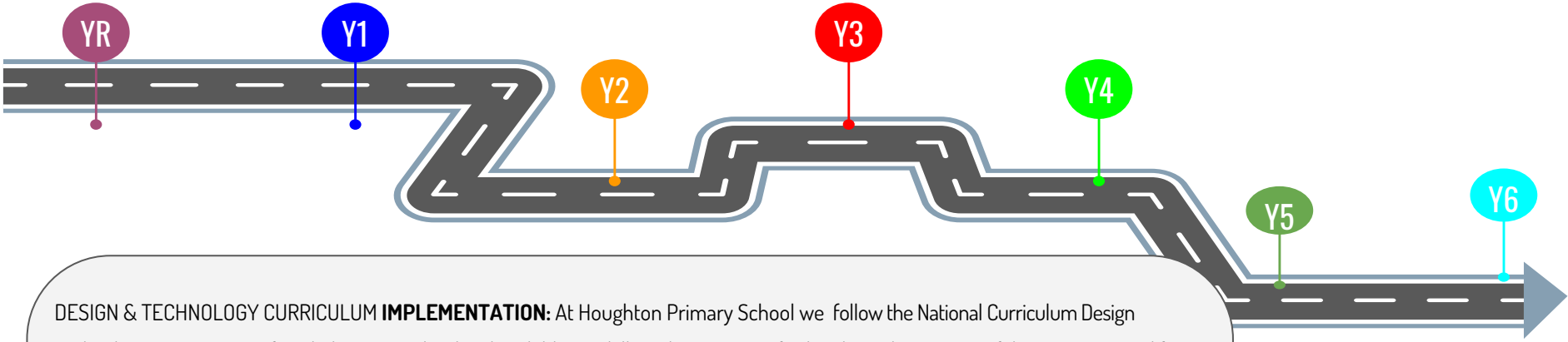
Houghton Primary School: DT



DESIGN & TECHNOLOGY CURRICULUM

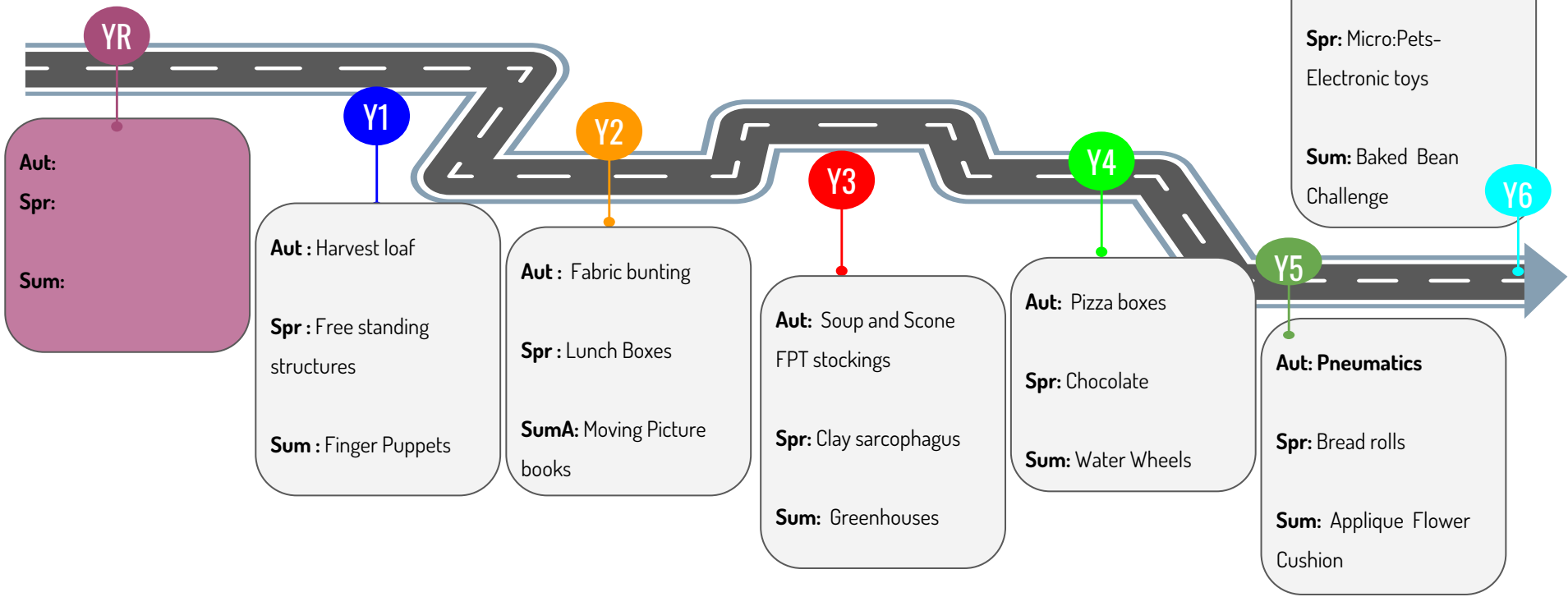
IMPLEMENTATION

Houghton Primary School: DT

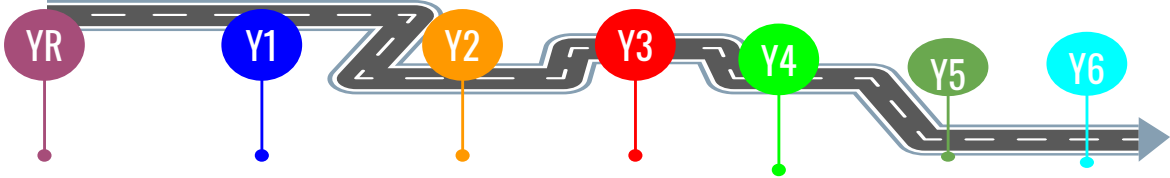


DESIGN & TECHNOLOGY CURRICULUM **IMPLEMENTATION:** At Houghton Primary School we follow the National Curriculum Design Technology programmes of study, but aim to develop the children's skills and experiences further by making purposeful, appropriate and fun links to the wider curriculum and to areas of interest to pupils. We aim to give the children a mixture of engaging full design projects and FPTs (Focused Practical Tasks) which combine the teaching of practical skills with knowledge of the design process. Over the course of each year, pupils engage in 3 units of work, at least one of these being focused on cookery and nutrition. These units give our pupils different experiences of product research as well as a wide range of opportunities to build products themselves through making prototypes, testing, designing and evaluating. Evaluation is a key skill which is embedded within each unit. We encourage pupils to take responsibility for their own work, make their own judgments, handle uncertainty and disappointments and adapt their plans in light of reflection, both personal and from their peers. Knowledge and skills are progressively revisited during our children's time in school to ensure their learning is embedded and fully developed. We aim that, over time, pupils will be able to autonomously design, make and evaluate their own projects. To enable this teachers aim to stand back and allow the children the time and space to think and try their own solutions to problems.

Houghton Primary School: DT

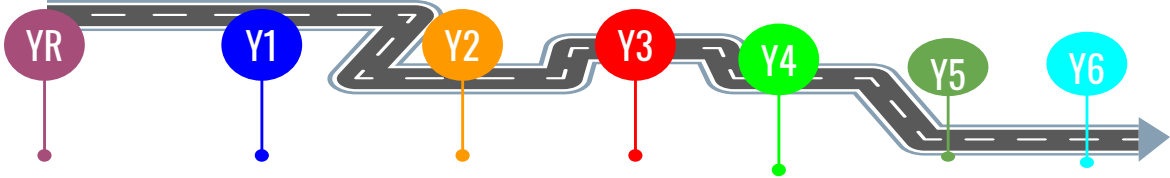


Houghton Primary School: DT



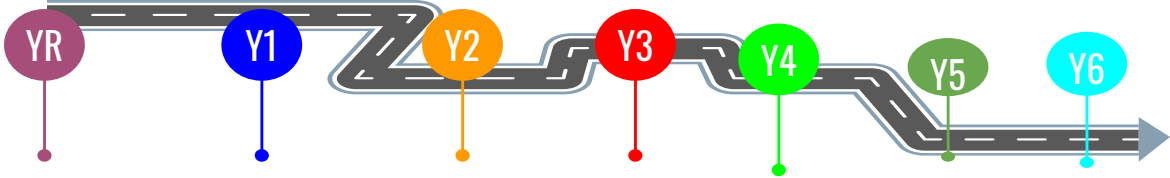
SKILLS PROGRESSION EYFS/KS1	By the end of EYFS children will be able to...	By the end of Year 1 children will be able to...	By the end of Year 2 children will be able to...
Developing, planning and communicating ideas.		Draw on their own experience to help generate ideas Suggest ideas and explain what they are going to do Identify a target group for what they intend to design and make Model their ideas in card and paper Develop their design ideas applying findings from their earlier research	Generate ideas by drawing on their own and other people's experiences Develop their design ideas through discussion, observation , drawing and modelling Identify a purpose for what they intend to design and make Identify simple design criteria Make simple drawings and label parts
Working with tools, equipment, materials and components to make quality products (inc-food)		Make their design using appropriate techniques With help measure, mark out, cut and shape a range of materials Use tools eg scissors and a hole punch safely Assemble, join and combine materials and components together using a variety of temporary methods e.g. glues or masking tape Select and use appropriate fruit and vegetables, processes and tools Use basic food handling, hygienic practices and personal hygiene Use simple finishing techniques to improve the appearance	Begin to select tools and materials; use vocab' to name and describe them Measure, cut and score with some accuracy Use hand tools safely and appropriately Assemble, join and combine materials in order to make a product Cut, shape and join fabric to make a simple garment. Use basic sewing techniques Follow safe procedures for food safety and hygiene Choose and use appropriate finishing techniques
Evaluating processes and products		Evaluate their product by discussing how well it works in relation to the purpose Evaluate their products as they are developed, identifying strengths and possible changes they might make Evaluate their product by asking questions about what they have made and how they have gone about it	Evaluate against their design criteria Evaluate their products as they are developed, identifying strengths and possible changes they might make Talk about their ideas, saying what they like and dislike about them

Houghton Primary School: DT



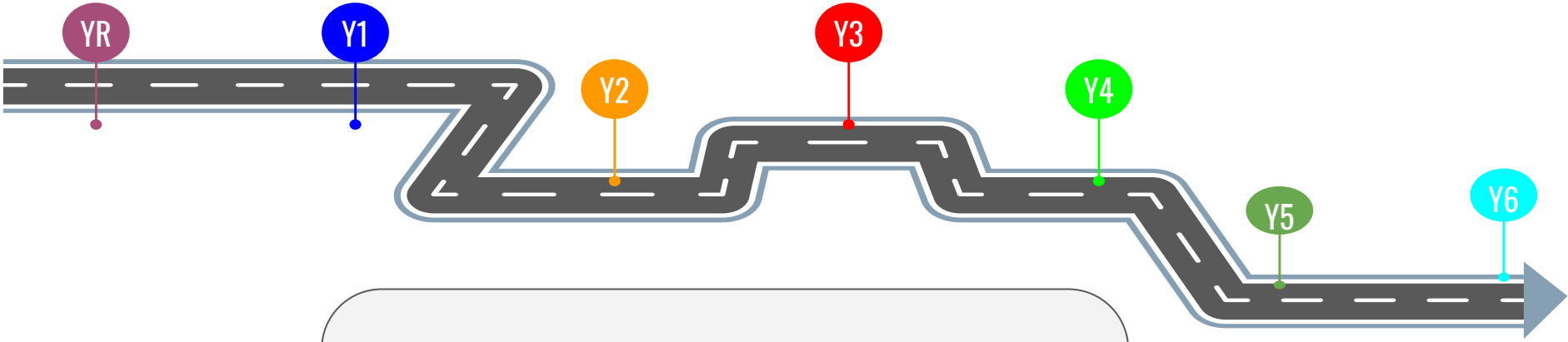
SKILLS PROGRESSION Y3/Y4	**By the end of Year 3 children will be able to...**	**By the end of Year 4 children will be able to...**
Developing, planning and communicating ideas.	Generate ideas for an item, considering its purpose and the user/s Identify a purpose and establish criteria for a successful product. Plan the order of their work before starting Explore, develop and communicate design proposals by modelling ideas Make drawings with labels when designing	Generate ideas, considering the purposes for which they are designing Make labelled drawings from different views showing specific features Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making, if the first attempts fail Evaluate products and identify criteria that can be used for their own designs
Working with tools, equipment, materials and components to make quality products (inc-food)	Select tools and techniques for making their product Measure, mark out, cut, score and assemble components with more accuracy Work safely and accurately with a range of simple tools Think about their ideas as they make progress and be willing change things if this helps them improve their work Measure, tape or pin, cut and join fabric with some accuracy Demonstrate hygienic food preparation and storage Use finishing techniques strengthen and improve the appearance of their product using a range of equipment including ICT	Select appropriate tools and techniques for making their product Measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques Join and combine materials and components accurately in temporary and permanent ways Sew using a range of different stitches, weave and knit Measure, tape or pin, cut and join fabric with some accuracy Use simple graphical communication techniques
Evaluating processes and products	Evaluate their product against original design criteria e.g. how well it meets its intended purpose Disassemble and evaluate familiar products	Evaluate their work both during and at the end of the assignment Evaluate their products carrying out appropriate tests

Houghton Primary School: DT



SKILLS PROGRESSION Y5/Y6	**By the end of Year 5 children will be able to...**	**By the end of Year 6 children will be able to...**
Developing, planning and communicating ideas.	Generate ideas through brainstorming and identify a purpose for their product Draw up a specification for their design Develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making if the first attempts fail Use results of investigations, information sources, including ICT when developing design ideas	Communicate their ideas through detailed labelled drawings Develop a design specification Explore, develop and communicate aspects of their design proposals by modelling their ideas in a variety of ways Plan the order of their work, choosing appropriate materials, tools and techniques
Working with tools, equipment, materials and components to make quality products (inc-food)	Select appropriate materials, tools and techniques Measure and mark out accurately Use skills in using different tools and equipment safely and accurately Weigh and measure accurately (time, dry ingredients, liquids) Apply the rules for basic food hygiene and other safe practices e.g. hazards relating to the use of ovens Cut and join with accuracy to ensure a good-quality finish to the product	Select appropriate tools, materials, components and techniques Assemble components make working models Use tools safely and accurately Construct products using permanent joining techniques Make modifications as they go along Pin, sew and stitch materials together create a product Achieve a quality product
Evaluating processes and products	Evaluate a product against the original design specification Evaluate it personally and seek evaluation from others	Evaluate their products, identifying strengths and areas for development, and carrying out appropriate tests Record their evaluations using drawings with labels Evaluate against their original criteria and suggest ways that their product could be improved

Houghton Primary School: DT



DT CURRICULUM **IMPACT:**

Skills and Knowledge Statements

As a result of teaching our DT curriculum what will our children be able to do (skills) and what will they know (knowledge)?

Houghton Primary School: DT

Y1

YEAR 1 CYCLE A: SKILLS

AUTUMN TERM A Y1: WOODLAND

Children working within year group expectations will be able to:

SPRING TERM A Y1: UP!

Children working within year group expectations will be able to:

SUMMER TERM A Y1: OUR WORLD - WATER

Children working within year group expectations will be able to:

Houghton Primary School: DT

Y1

YEAR 1 CYCLE A: KNOWLEDGE

AUTUMN TERM A Y1: WOODLAND

By the end of this term children will know:

SPRING TERM A Y1: UP!

By the end of this term children will know:

SUMMER TERM A Y1: OUR WORLD - WATER

By the end of this term children will know:

Houghton Primary School: DT

Y2

YEAR 2 : SKILLS

AUTUMN TERM

Children working within year group expectations will be able to:

Say what they like and dislike about the design of existing products.

Use a graphics program to repeat and fill images to create an appealing design.

Demonstrate some accuracy when cutting around a fabric shape.

Create a seam using a running stitch.

Choose appropriate fabric to add decoration.

Give and receive feedback to suggest improvements to their products.

SPRING TERM

Children working within year group expectations will be able to:

Explore an existing product and describe its problems and positives;

Draw a design and describe it;

Build strong structures;

Test their own product and suggest improvements.

SUMMER TERM

Children working within year group expectations will be able to:

Evaluate how well a product works.

Draw a simple design and add annotations.

Make a picture which aims to have two moving mechanisms.

Use design criteria to help guide the making and evaluation process.

Houghton Primary School: DT

Y2

YEAR 2 CYCLE A: KNOWLEDGE

AUTUMN TERM A Y2: WOODLAND

By the end of this term children will know:
The importance of clearly marking fabric before cutting.

That it is important to cut accurately and neatly

The most effective way to thread a needle.

That running stitch is an effective way to join two pieces of fabric.

That there are different ways of joining fabric together

That feedback can be used to improve their product.

SPRING TERM A Y2: UP!

By the end of this term children will know:
The type of materials that would be suitable for storing food

Which reclaimed materials will be appropriate for carrying food

That different materials need to be joined in different ways

That some foods are healthier than others and that we need to eat a balanced diet

SUMMER TERM A Y2: OUR WORLD - WATER

By the end of this term children will know:
That moving pictures have parts which are hidden in order to be aesthetically pleasing

That heavier papers/cards are more suitable than lightweight papers

The most appropriate way of joining two parts of a mechanism together so that they are able to move and aren't static

Houghton Primary School: DT

Y3

YEAR 3 SKILLS

AUTUMN TERM Y3: NEVERBELIEVE/STONE AGE

Children working within year group expectations will be able to:

Recognise food groups and need for a balanced diet

Design a healthy soup and scone recipe stating ingredients' food groups

Evaluate their recipes in light of peer feedback and adapt as required

Use kitchen utensils safely and appropriately
Explain the importance of food hygiene and good practice

Recognise what foods are in season and local

FPT Stocking Design a stocking to look appealing and understand how they are going to make it.

Use basic sewing techniques

Adapt their plans as they work to improve their designs and finished product

SPRING TERM Y3: EGYPT

Children working within year group expectations will be able to:

Design a model to look appealing and include features based on their learning in other subjects.

Explain the properties of clay and how to use it successfully-i.e, stopping it from drying out, using slip to join sections and effects made with various tools

.

Paint carefully, considering aesthetics, brush size, choice of colours etc.

SUMMER TERM Y3: GERMANY (MFL)

Children working within year group expectations will be able to:

Design a greenhouse which will work successfully and look good (function and aesthetics)

Join pieces together securely and effectively

Select resources based upon properties and aesthetics.

Regularly evaluate their work, making improvements and alterations as they work.

Houghton Primary School: DT

Y3

YEAR 3 KNOWLEDGE

AUTUMN TERM Y3: NEVERBELIEVE/STONE AGE

By the end of this term children will know:

That a balanced diet consists of the right balance between different food groups.

That recipes can be created which make healthy choices between food groups

That kitchen utensils should be used safely and appropriately

That recipes may need to be adapted in response to customer feedback

Why food hygiene is important

That some foods are in season and local

Which basic sewing techniques are best suited to create their stocking.

That plans may need to be adapted to ensure a quality finished product

SPRING TERM Y3: EGYPT

By the end of this term children will know:

That clay needs to be stored carefully to prevent it drying between use

That slip cn be used to join sections

That different effects can be made with various tools

That they need to carefully consider the size of their tools when applying finishing touches.

That feedback can be used to improve their designs,

SUMMER TERM Y3: GERMANY (MFL)

By the end of this term children will know:

That different materials allow more light than others

That materials can be joined together in temporary and permanent ways using different techniques

That resources should be selected based upon both their properties and aesthetic appeal.

That regularly evaluating their work and making improvements and alterations as they go is an effective way to work.

Houghton Primary School: DT

Y4

YEAR 4 SKILLS

AUTUMN TERM Y4: EUROPE (THEN & NOW)

Children working within year group expectations will be able to: (design and create a healthy pizza, inspired by work on the culture of Italy.) light up Christmas cards

Recognise the main 5 food groups and explain how they relate to a balanced and healthy diet.
Adapt a basic recipe to make healthier versions and explain the changes made.
Select ingredients purposefully to meet the needs of their design brief.
Explain how to keep safe in the kitchen.
Use basic kitchen tools to safely prepare and cook food, including: knife, chopping board, grater.
Suggest different methods of cooking e.g. on the hob boiling, in the oven baking etc.
Identify foods that will grow in the UK climate and compare this with a mediterranean climate.
Choose and use cutting tools accurately and safely.
Evaluate and research specific design features e.g. the pizza saver found in pizza boxes.
Construct simple electrical circuits for use in final products.

SPRING TERM Y4; SOUTH AMERICA:

Children working within year group expectations will be able to: (create a new machine inspired by the inventing room, in Charlie and the Chocolate factory.)

Plan ideas on paper to fulfil a given brief and communicate those ideas to others.

Explore and investigate how simple mechanisms such as levers, gears and linkages work in everyday objects.

Create examples of levers, gears and linkages using simple materials.

Combine simple mechanical devices in an overall design to create a prototype for a machine.

Evaluate own creations and reflect on the process identifying areas of improvement and change.

SUMMER TERM Y4: RIVER GREAT OUSE

Children working within year group expectations will be able to: (Make a working model of a water wheel based on the water wheel at Houghton mill.)

Observe and investigate how a real-life working water wheel works.

Explore how gears, axles and cams enable energy / movement to be transferred from one place to another by creating working models.

Choose materials on purpose for their functional properties e.g. strength / waterproof/ flexibility and be able to explain choices.

Houghton Primary School: DT

Y4

YEAR 4 KNOWLEDGE

AUTUMN TERM Y4: EUROPE (THEN & NOW)

By the end of this term children will know:

That there are 5 main food groups and what constitutes a balanced and healthy diet.
That basic recipes can be adapted to make healthier versions
That Design Briefs can be mat through adapting recipes. .
What rules need to be followed to keep safe in the kitchen.
That tools such as knives and graters need to be used safely.
That there are different ways of cooking products such as on the hob boiling, baking in the oven etc.
That the UK and Mediterranean climates are different and therefore are suited to different food production.
The importance of product research and evaluation.
The history of the pizza saver found in pizza boxes.

SPRING TERM Y4; SOUTH AMERICA:

By the end of this term children will know:

Examples of where levers, gears and linkages are used in everyday devices e.g. door handles, security barriers, bridges, watches etc
How these mechanical systems work and be able to explain the key principles.
How to use everyday materials to create these mechanical devices.
How to combine these devices together to create a prototype for a machine.

SUMMER TERM Y4: RIVER GREAT OUSE

By the end of this term children will know:

The purpose of Houghton mill, how mechanisms and machines play an essential role in our lives and have done throughout recorded history.

How the movement of the water outside is used to grind the wheat inside through the mechanism of the water wheel.

How gears, cams and axles work together to transfer energy / movement from one place to another.

Houghton Primary School: DT

Y5

YEAR 5 SKILLS

AUTUMN TERM Y5:

Children working within year group expectations will be able to:

Explain how pneumatics work

Use pneumatic systems in conjunction with levers to control movement

Design and make an alien with moving parts that uses a pneumatic system

Continuously evaluate the effectiveness of their plan, making changes as required to create the desired movement

Evaluate finished product and make suggestions as to how it could be improved.

SPRING TERM Y5;

Children working within year group expectations will be able to:
Taste test different types of bread

Evaluate these based on taste,texture and look,

Find out about breads from around the world and the differences with a standard white loaf

Design a roll for a specific purpose.

Adapt/ make rolls using chosen ingredients

Evaluate their bread according to criterias of taste,texture,look etc

Design targeted marketing for their bread including packaging for a stated target audience.

SUMMER TERM Y5:

Children working within year group expectations will be able to:
Pin and tack pieces of material together to create a temporary join

Create a flower design

Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design

Allow for seam allowances

Use blanket stitch

Add embellishments to their piece

Make changes to their design during making if necessary

Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work

Houghton Primary School: DT

Y5

YEAR 5 KNOWLEDGE

AUTUMN TERM Y5:

By the end of this term children will know:

That pneumatics is the process of using air pressure to create movement

That levers can be used to change the direction of movement

That the length and position of the pneumatic parts will influence the movement produced.

That designs may need to be adapted in response to regular feedback and self-evaluation.

SPRING TERM Y5:

By the end of this term children will know:

That bread can be created for different occasions and to accompany different meals.

That there are different types of bread which originate from different countries

That not all bread tastes the same and have a wide vocabulary to express this.

Why bread is kneaded and the effect yeast has on the dough.

That bread can be shaped in various ways including plaiting.

That packaging can be adapted to make it appeal to different target audiences.

That bread products can be evaluated in terms of taste and appearance

SUMMER TERM Y5:

By the end of this term children will know:

That material can be pinned and tacked together to create a temporary joins

That they need to take seam allowances into consideration before cutting fabric.

Which stitch is appropriate for different uses.

That blanket stitch is a decorative way to edge a product

That embellishments such as beads can be added to enhance their designs.

That they may need to change designs in response to ongoing evaluation and feedback.

Houghton Primary School: DT

Y6

YEAR 6 SKILLS

AUTUMN TERM Y6:

Children working within year group expectations will be able to:
Evaluate a range of roller-coaster designs and develop a shared vocabulary for different aspects of the ride.
Design a roller-coaster which meets a given design criteria and which appeals to the identified end users.
Justifying particular design decisions.
Create an exploded diagram to communicate their ideas.
Use their plans to create prototypes to demonstrate their paper ideas and test their effectiveness.
Independently select materials thoughtfully, considering the technical requirements of different parts of the structure.
Join materials effectively drawing upon their knowledge of different techniques and selecting appropriate methods.
Test their prototype to ensure it meets the design criteria
Evaluate their plans and prototype by referring to the original design criteria and constructive peer feedback

SPRING TERM Y6:

Children working within year group expectations will be able to:

Create a tamagotchi style interactive pet which responds to user inputs

Consider the target audience when designing

Design and make an appealing outer shell to securely hold their Micro:pets and cells.

Ensure the electronic components are securely attached to the outer shell.

Debug their final product

Carry out market research to test the effectiveness of their final product. .

SUMMER TERM Y6:

Children working within year group expectations will be able to:
Taste-test a variety of commercial baked bean brands, and use a wide range of vocabulary to describe the texture and taste.
Examine the calorie, salt and sugar content of different brands of beans.
Evaluate if baked beans are a healthy option and which brands are healthiest.
Understand how baked beans are commercially processed from field to fork.
Cook a basic recipes for fresh baked
Adapt the basic recipe to create their own meal based on their personal tastes- ie. curried beans, chilli beans low sugar beans etc
Evaluate each others products
Design marketing for their new product with their end user in mind..

Houghton Primary School: DT

Y6

YEAR 6 KNOWLEDGE

AUTUMN TERM Y6:

By the end of this term children will know:
The main features of a rollercoaster using agreed terminology

That exploded designs can be used to communicate their ideas effectively to others.

The importance of meeting the news of the end user when designing products

The importance of creating prototypes to test ideas

Which materials are best for different purposes

That materials can be secured and joined using a range of techniques

The best techniques and shapes to create a strong and stable structure

The importance of evaluating work and making ongoing improvements to their designs actively seeking feedback to improve their designs.

SPRING TERM Y6:

By the end of this term children will know:
Who they are designing for/ their target audience

What style and features would appeal to their target audience.

That they can combine electronic and concrete materials to create an interactive toy

That electronic components need to be securely located within their shells allowing user access to the cell and buttons.

The importance of checking the toy works as planned.

The importance of carrying out market research and that changes may be needed in response to this.

SUMMER TERM Y6:

By the end of this term children will know:
That many foods originate from the Americas

That the same product can be produced to different recipes

The vocabulary required to described food in terms of appearance, taste, smell and texture.

That different recipes have different calorie and salt content
and that this can impact the health benefits of the food.

That haricot beans are usually used in baked beans

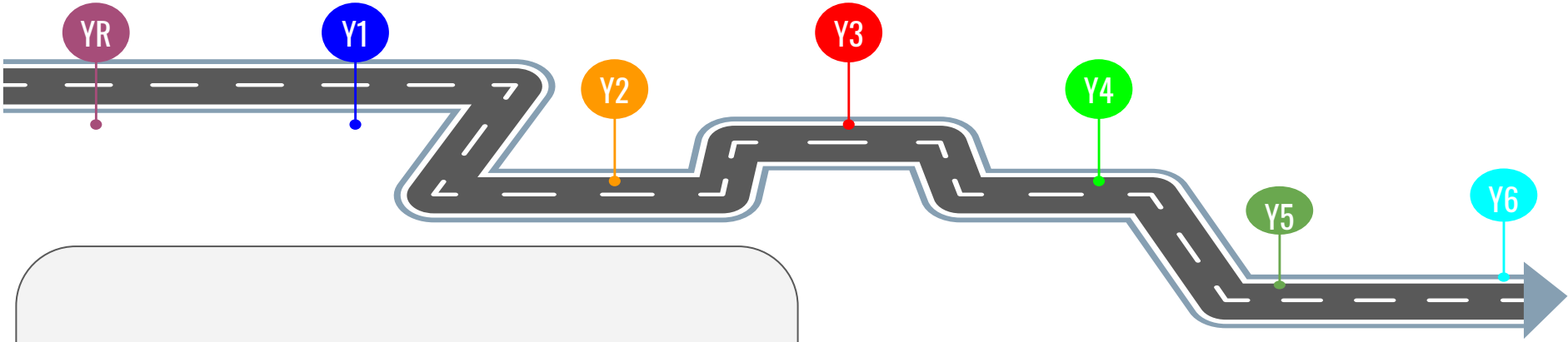
That haricot beans are imported from North America- primarily the states of Michigan, Idaho and Washington State

The process by which baked beans are commercially made.
.

That dried beans need to soaked before cooking .

That a recipe can be adapted to personal taste.

Houghton Primary School: DT



DT CURRICULUM **IMPACT:**

ASSESSMENT

As a result of teaching our DT curriculum what are our children be able to do (skills) and what do they know (knowledge)?

Assessment Statement:

Assessment of DT **skills** is ongoing (formative) during lessons.

Teachers use the skills statements to assess and use this responsively to support children as necessary.

At the end of each unit teachers assess children's **knowledge** through comparative judgement, low stakes quizzes and similar activities.

Knowledge is revisited over the course of the year to support long term memory and retrieval.