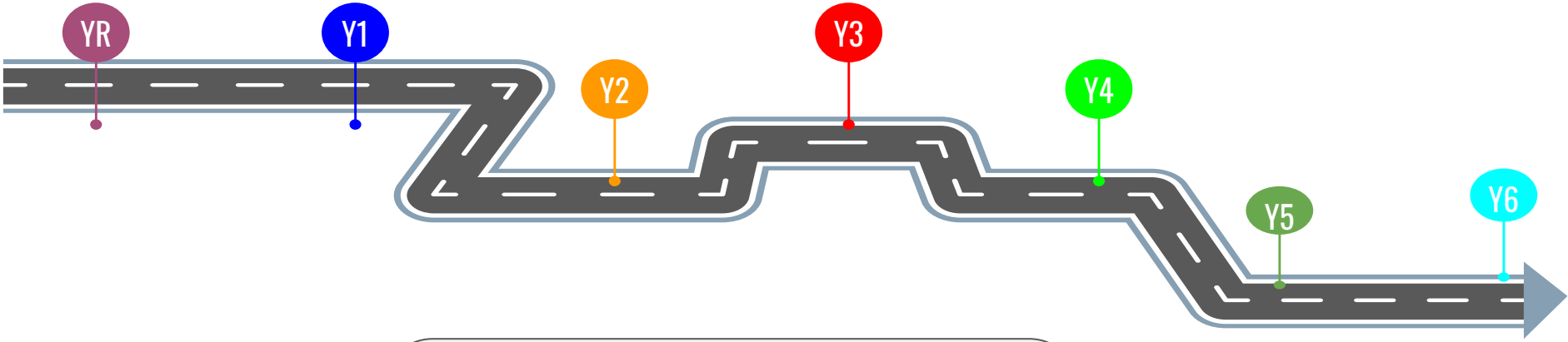
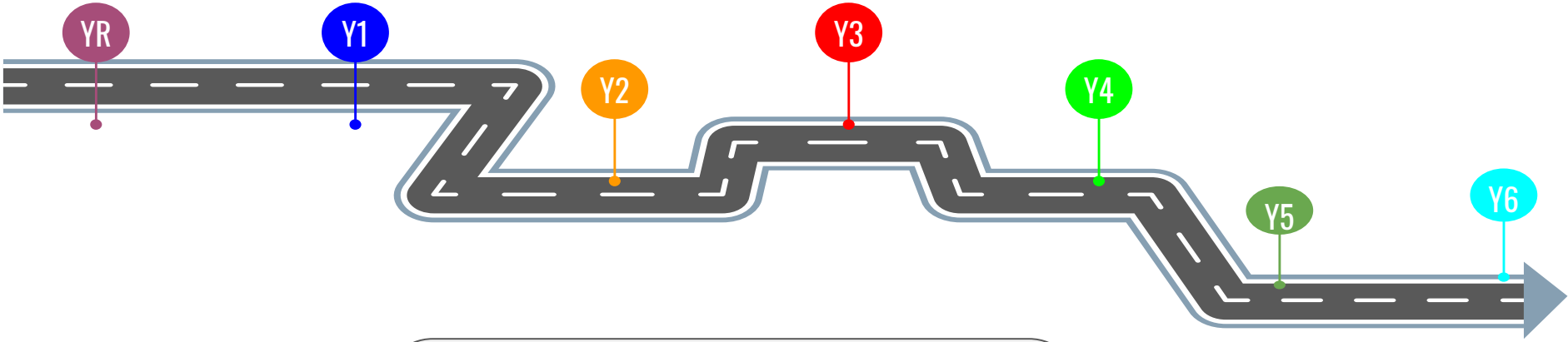
Houghton Primary School: COMPUTING



COMPUTING

CURRICULUM

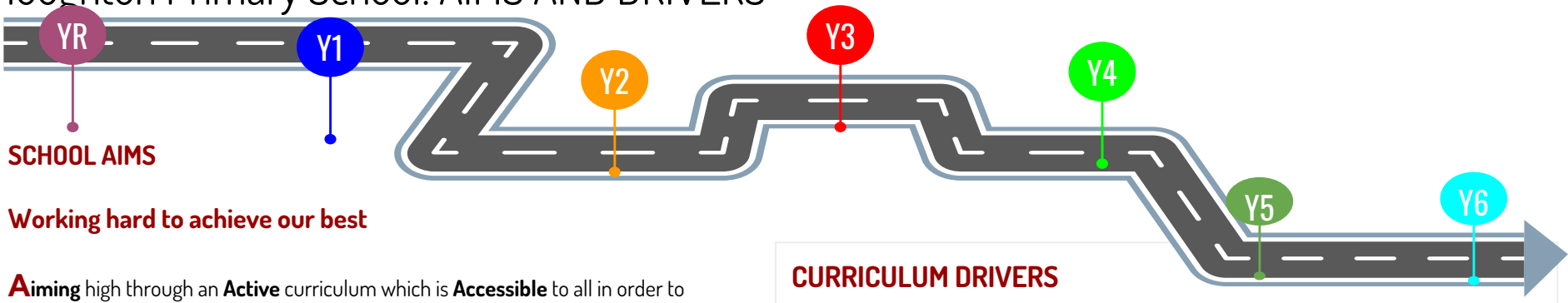
Houghton Primary School: COMPUTING



COMPUTING 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

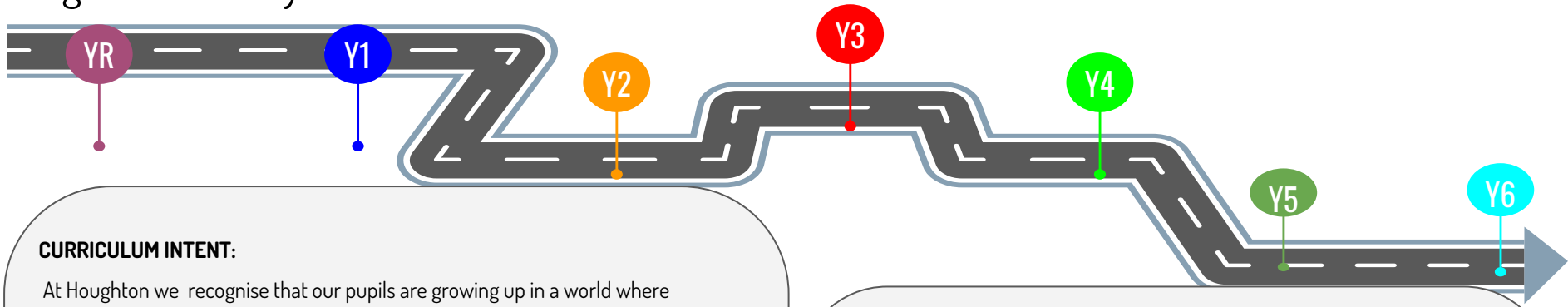
Environment to foster a passion for both the local and global environment and take responsibility for its care

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: COMPUTING



CURRICULUM INTENT:

At Houghton we recognise that our pupils are growing up in a world where technology is developing rapidly and is quickly becoming embedded within their everyday experiences. Our curriculum has been created around the belief that in order to thrive in their future lives, pupils need to be taught the skills to grow as responsible, confident and discerning users of technology who treat others and their intellectual property with respect.

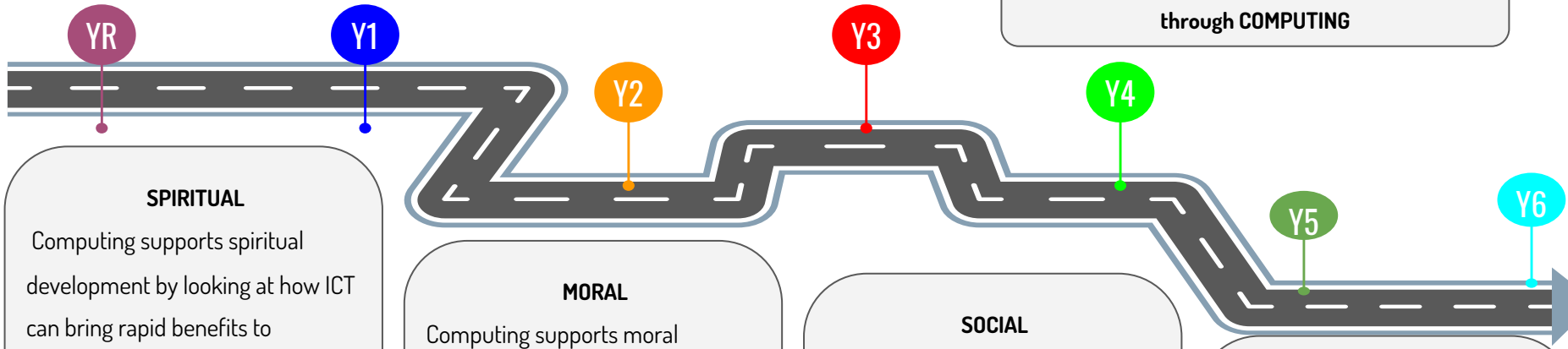
Within our Computing curriculum, we aim to promote our pupils' independent problem solving skills and resilience along with their ability to manage risk. We make links within the wider curriculum to create opportunities for meaningful and creative learning which celebrates creativity and originality. We wish to inspire and empower our students to be confident, creative and active participants in the digital age.

We take every opportunity to ensure that our school curriculum drivers of oracy and enquiry remain central to our approach for this subject area and plan opportunities for enterprise where appropriate.

NC PURPOSE OF STUDY: A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

Houghton Primary School: COMPUTING

Spiritual, Moral, Social and Cultural Development through COMPUTING



SPIRITUAL

Computing supports spiritual development by looking at how ICT can bring rapid benefits to discussions and tolerance to an individual's beliefs. However, children are also exposed to the limitations and abuse of the internet where they question and justify the aims, values and principles of their own and others' belief systems.

MORAL

Computing supports moral development by looking at how ICT developments have had an impact on the environment as technology has meant that old ways of working have been changed to help the environment.

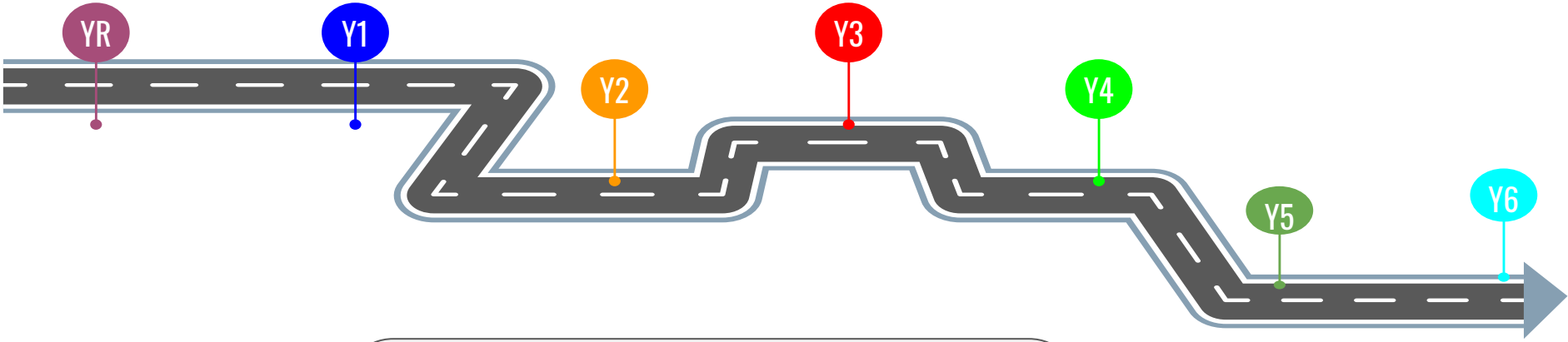
SOCIAL

Computing supports social development by completing of group work within lessons as well as practical tasks. Children are required to understand about social media and the advantages these sites have brought as well as the numerous problems such as cyber bullying.

CULTURAL

The development in technology has impacted different cultures and backgrounds in different ways. More developed countries are able to keep pace with the developments in technology whilst less developed ones can't.

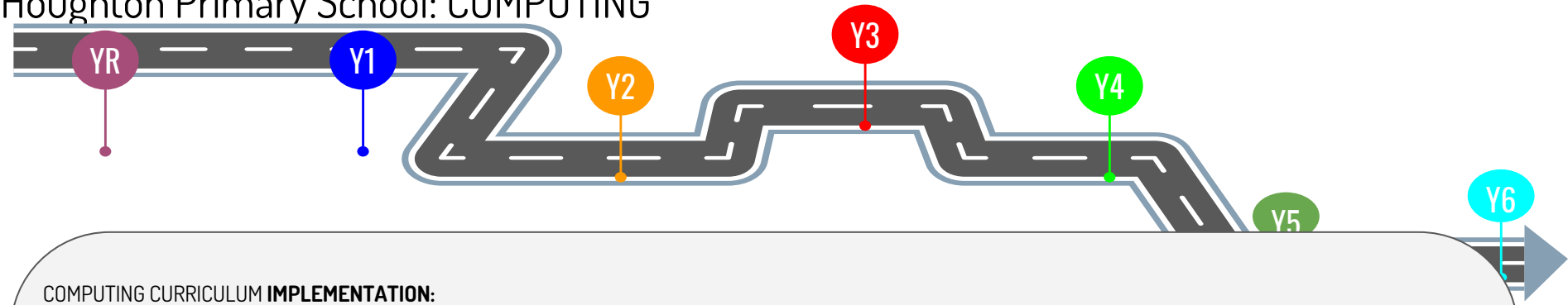
Houghton Primary School: COMPUTING



COMPUTING CURRICULUM

IMPLEMENTATION

Houghton Primary School: COMPUTING



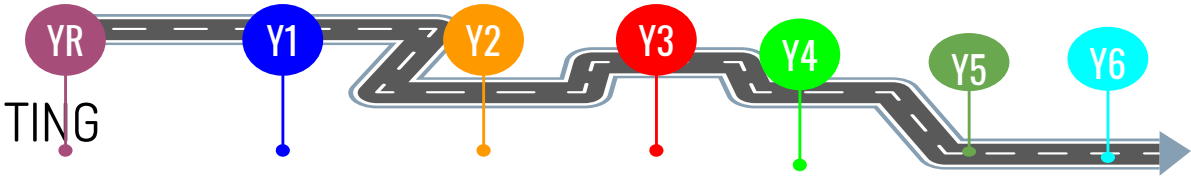
COMPUTING CURRICULUM **IMPLEMENTATION:**

At Houghton Primary School we follow the National Curriculum Computing programmes of study, but aim to develop the children's computer literacy further by making purposeful and appropriate links to the full curriculum. Our Computing curriculum is focused on a progression of skills in computing science, digital literacy, information technology and online safety. These strands are revisited repeatedly during our children's time in school to ensure their learning is embedded and skills are successfully developed.

We aim to give the children a variety of online and digital experiences and opportunities within a safe and secure learning environment. We subscribe to the secure cloud based learning platform Purple Mash. This platform allows our pupils safe access to email and blogging facilities: we also utilise the creative software available on the platform to enhance learning and embed computing skills throughout the curriculum - for example using music creation software, animation apps, graphing tools and painting software . The platform also allows the children to securely share their work with classmates through the use of notice boards, enabling further real-life collaborative and evaluative opportunities.

The programming aspects of the curriculum are taught predominantly through the app 2Code in KS1 and Lower KS2; within this the children are given progressingly challenging structured and free coding opportunities using this block based coding program. In Upper KS2 pupils are introduced to other coding programs including Scratch and Micro:bits to develop varied coding experience in preparation for secondary school.

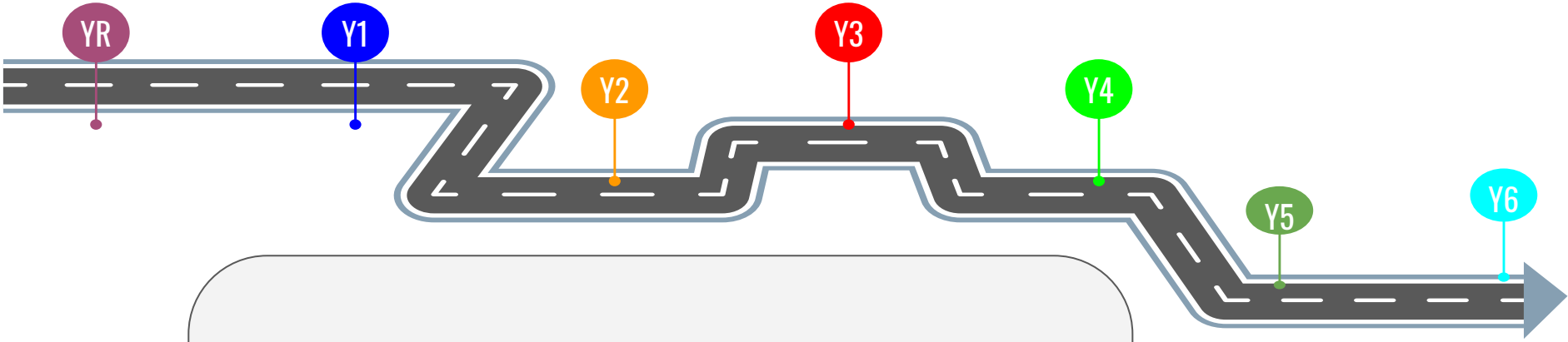
Our school is resourced with PCs, laptops, ipads and a variety of other hardware resources to enable the teaching of computing. Technical support is provided by an external contractor on a fortnightly basis. Teachers and support staff access CPD from our computing lead and external providers.



Houghton Primary School: COMPUTING

EYFS/NC Statements	Autumn	Spring	Summer
Reception			
Key Stage 1	Recognise common uses of information technology beyond school Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	Use technology purposefully to create, organise, store, manipulate and retrieve digital content	Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions Create and debug simple programs Use logical reasoning to predict the behaviour of simple programs
Key Stage 2	Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration. Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concern about content and contact.	Use search technologies effectively and be discerning in evaluating digital content Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. (Spring and Summer Terms are interchanged in Year 6 to take advantage of links within the wider Curriculum)	Design, write and debug programs that accomplish specific goals; solve problems by decomposing them into smaller parts. Use repetition in programs Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.

Houghton Primary School: COMPUTING



COMPUTING CURRICULUM **IMPACT:**

Skills and Knowledge Statements

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

Houghton Primary School: COMPUTING

Y1

YEAR 1: SKILLS

AUTUMN TERM

Children working within year group expectations will be able to:

Explain what is meant by technology and identify a variety of examples both in and out of school.

Sort objects that use modern technology and those that don't e.g. a microwave vs. a chair.

Log into their Purple Mash accounts using their own passwords and logins

Keep information, such as their usernames and passwords, private

Save their work in their own private space such as their My Work folder on Purple Mash.

SPRING TERM

Children working within year group expectations will be able to:

Sort, collate, edit and store simple digital content.

Name, save and retrieve their work and follow simple instructions to access online resources.

SUMMER TERM

Children working within year group expectations will be able to:

Explain that an algorithm is a set of instructions used to solve a problem or achieve an objective.

Work out what is wrong with a simple algorithm when the steps are out of order,

Read code one line at a time and make good attempts to envision the bigger picture of the overall effect of the program.

Predict the finishing location of the turtle in a 2Go challenge.

Houghton Primary School: COMPUTING

Y1

YEAR 1: KNOWLEDGE

AUTUMN TERM

By the end of this term children will know:

What is meant by 'technology'.

Examples of types of technology used in school and out of school.

That they need to log into their Purple Mash Accounts using their own login and password

Why they need to keep their password and usernames private.

That they need to save work into their folder on Purple Mash and understand that this is their private space.

That saving their work means that they can retrieve it at a later date.

That the work they create is their property

SPRING TERM

By the end of this term children will know:

That objects can be sorted in various ways using a range of criteria.

That drawing tools can be used to create images

That a range of digital work can be opened and saved so that it can retrieved.

SUMMER TERM

By the end of this term children will know:

That an algorithm written for a computer is called a program.

That computers operate according to a set of instructions which they follow.

That code blocks can be arranged to create a set of instructions.

That a simple program can be created using code blocks

That objects in their scene can be added to, changed and deleted.

That programmes which contain errors need debugging .

Houghton Primary School: COMPUTING

Y2

YEAR 2 SKILLS

AUTUMN TERM

Children working within year group expectations will be able to:

Retrieve relevant, purposeful digital content using a search engine.

Share electronically such as posting work to the Purple Mash display board.

Use email safely to write and send email (by using 2Respond activities on Purple Mash).

Report anything which makes them feel uncomfortable to a trusted adult.

SPRING TERM

Children working within year group expectations will be able to:

Organise data.

Use a database such as 2Investigate to retrieve specific data for conducting simple searches.

Edit more complex digital data such as music compositions within 2Sequence.

Create, name, save and retrieve content using a range of media including photos, text and sound.

SUMMER TERM

Children working within year group expectations will be able to:

Explain that an algorithm is a set of instructions to complete a task.

Write clear and precise algorithms so that they can be successfully converted into code

Create a simple program that achieves a specific purpose, identifying errors

Identify the parts of a program that respond to specific events or initiate specific actions.

Houghton Primary School: COMPUTING

Y2

YEAR 2 KNOWLEDGE

AUTUMN TERM

By the end of this term children will know:

That keywords can be used to make effective searches.
What makes them feel happy and what makes them feel sad.
What a digital footprint is.
What information is safe to share and what information is not.
The implications of inappropriate online searches.
That appropriate work can be shared on shared areas such as class display boards
That they can respond to a character in 2 Respond using email.
What to do if they find something online that makes them feel sad or scared.

SPRING TERM

By the end of this term children will know:

That photos and pictures can be inserted into quizzes they have created online.

That binary trees can be used to sort data.

.

That binary trees sort through yes, no questions.

That databases can be used to record and retrieve information.

That they can create and save music online,.

SUMMER TERM

By the end of this term children will know:

That an algorithm is a set of instructions.
That for the computer to make something happen, it needs to follow clear instructions.
That it is possible to read blocks of code and predict what will happen when it is run.
The purpose of a timer
That objects can be added into their programs
That objects can be made to move within their programs
That they can create simple programs which achieve specific goals.
That when a program does not run correctly it needs to be debugged,

Houghton Primary School: COMPUTING

Y3

YEAR 3 SKILLS

AUTUMN TERM

Children working within year group expectations will be able to:
List a range of ways that the internet can be used to provide different methods of communication.

Open, respond to and attach files to emails using 2Email.

Describe appropriate email conventions when communicating .

Explain the importance of having a secure password and not sharing this with anyone else.

Explain the negative implications of failure to keep passwords safe and secure.

SPRING TERM

Children working within year group expectations will be able to:
Carry out simple searches to retrieve digital content.

Explain that to do this, they are connecting to the internet and using a search engine such as Purple Mash search or internet-wide search engines.

Collect, analyse, evaluate and present data and information using a selection of software.

SUMMER TERM

Children working within year group expectations will be able to:
Turn a simple real-life situation into an algorithm for a program by decomposing it into manageable parts.

Identify an error within their program that prevents it following the desired algorithm and then fix it.

Design and code a program that follows a simple sequence.

Experiment with timers to achieve repetition effects in their programs.

Create designs for their programs which follow logical achievable steps.

Use click events, repeats and timers.
Identify and fix errors in algorithms through debugging.

Houghton Primary School: COMPUTING

Y3

YEAR 3 KNOWLEDGE

AUTUMN TERM

By the end of this term children will know:

That they need to respond appropriately to an email

.

That an address book can be used to search for contacts.

That attachments are used to add copies of documents to emails.

That using CC and BCC can copy their email to others

What makes a strong password

The consequences of not keeping passwords secure

The physical and emotional effects of playing/watching inappropriate content/games.

That cyberbullying is as wrong as bullying in the real-world and have strategies for dealing with online bullying including screenshot and reporting.

The importance of regulating their conduct when using familiar communication tools.

More than one way to report unacceptable content and contact.

SPRING TERM

By the end of this term children will know:

That some information found online may not be true or accurate.

That they may need to fact check information found on a Website.

That data and information can be presented using a range of software including Google Slides.

That graphing software can be used to analyse and present data.

SUMMER TERM

By the end of this term children will know:

That information can be recorded using a flow diagram

.

That flow diagrams can be used to create simple programs.

That by decomposing problems into simple steps they can create programs.

Why click events are be used in programs

Why timer commands are used in programs

That code can be simplified using a repeat command

That timer commands and repeat commands are different

Why they need to test and debug their systems

Houghton Primary School: COMPUTING

Y4

YEAR 4 SKILLS

AUTUMN TERM

Children working within year group expectations will be able to:

Recognise the main component parts of hardware which allow computers to join and form a network.

Use concept mapping such as 2 connect to explore key concepts relating to online safety.

Describe a range of ways of reporting inappropriate content and contact.

SPRING TERM

Children working within year group expectations will be able to:

Explain the function, features and layout of a search engine.

Appraise selected webpages for credibility and information at a basic level.

Make improvements to digital solutions based on feedback.

Make informed software choices when presenting information and data.

SUMMER TERM

Children working within year group expectations will be able to:
Use selection and repetition.

Design programs which turn a real-life situation into an algorithm,

Make more intuitive attempts to debug their own programs.

Use timers to achieve repetition,

Use 'if statements' for selection and attempt to combine these with other coding structures including variables

Use and manipulate the value of variables.

Create designs for their programs which show that they are thinking of the structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures. For example, 'if' statements and repetition.

Trace code and use step-through methods to identify errors in code and make logical attempts to correct this.

Houghton Primary School: COMPUTING

Y4

YEAR 4 KNOWLEDGE

AUTUMN TERM

By the end of this term children will know:

The names of the different parts of a desktop computer.

What the function of the different parts of a computer are.

That the padlock symbol indicates that a site is secure.

What 'phishing' is

What identity theft is and how to protect their digital footprint.

What malware and computer viruses are and how they can gain access to hardware.

What copyright is

That they must cite information found online

Why they should find a balance between active and online pastimes.

SPRING TERM

By the end of this term children will know:

That search questions can be used to find specific information.

That different search engines might give different results.

That digital content should be analysed to check its credibility..

Why simple animations are used to share information and knowledge.

What onion skinning is and how to use it to create smooth animations.

That feedback can be used to improve their work.

SUMMER TERM

By the end of this term children will know:

That when selection is used, a program will choose a different outcome depending on a condition.

When and how to use a repetition commands and timers

That backgrounds and objects can be used to create a scene.

The purpose of IF statement within programmes

Why X and Y properties are useful in programming.

Why 'repeat until' and 'IF/ ELSE' commands are used in programming.

What a variable is

That a playable game can be created using IF/ELSE, X Y properties and a basic understanding of variables

Why it is important to debug their programs

Houghton Primary School: COMPUTING

Y5

YEAR 5 SKILLS

AUTUMN TERM Y5

Children working within year group expectations will be able to:
Recognise what personal information

Explain how personal information can be kept safe.

Select the most appropriate form of online communications based on audience and digital content,

Demonstrate the safe and respectful use of a few different technologies and online services.

Relate appropriate online behaviour to their right to personal privacy and mental wellbeing of themselves and others.

SPRING TERM Y5

Children working within year group expectations will be able to:

Search with greater complexity for digital content when using a search engine.

Create databases to share information with others.

Make appropriate improvements to digital solutions based on feedback received and confidently comment on the success of the solution.

SUMMER TERM Y5

Children working within year group expectations will be able to:
Turn more complex real-life situations into algorithms for a program by deconstructing it into manageable parts.

Test and debug their programs as they go and use logical methods to identify the approximate cause of any bug .

Translate algorithms that include sequence, selection and repetition into code with increasing ease and their own designs

Houghton Primary School: COMPUTING

Y5

YEAR 5 KNOWLEDGE

AUTUMN TERM Y5

By the end of this term children will know:
That information accessed online should be critically analysed..

That online images can be altered

That altering images could be damaging to people's mental wellbeing.

Why it is important that they cite all sources when researching.

To use key words and a variety of search engines to search effectively

That there are official ways that concerns over contact or content should be reported
.
The advantages and disadvantages of different types of communication.

SPRING TERM Y5

By the end of this term children will know:
Different ways to search a database.

That they can answer questions using a database

That information can be added into a database

What a database field is

That databases require questions to be worded precisely.
.
That receiving feedback can help then to improve their database.

SUMMER TERM Y5

By the end of this term children will know:
Why decomposition is used in programing .

When and where to use sequence, repetition and selection in their code

What abstraction is and when it is useful in programming.

That variables can be set and changed in a simulation.

That functions can be used to make code efficient.

Houghton Primary School: COMPUTING

Y6

YEAR 6 SKILLS

AUTUMN TERM Y6

Children working within year group expectations will be able to:
Explain in some depth the difference between the internet and the World Wide Web.

Explain what a WAN and LAN are and can describe how they access the internet in school.

Demonstrate the safe and respectful use of a range of different technologies and online services.

Identify more discreet inappropriate behaviours through developing critical thinking.

Recognise the value in preserving their privacy when online for their own and other people's safety.

SPRING TERM Y6

Children working within year group expectations will be able to:
Turn a more complex programming task into an algorithm by using abstraction and decomposition.

Test and debug their program to find the cause of bugs,

Demonstrate a systematic approach to try to identify a particular line of code causing a problem.

Translate algorithms that include sequence, selection and repetition into code.

Use variables in coding.

Use outputs such as sound and movement as well as inputs from the user of the program such as button clicks and the value of functions.

SUMMER TERM Y6

Children working within year group expectations will be able to:
Explain in detail how credible a webpage is and the information it contains.

Compare a range of digital content sources and rate them in terms of content quality and accuracy.

Use critical thinking skills in everyday use of online communication

Make clear connections to the audience when designing and creating digital content, creating their own blogs to become a content creator on the internet.

Use criteria to evaluate the quality of content and identify improvements, making some refinements.

Houghton Primary School: COMPUTING

Y6

YEAR 6 KNOWLEDGE

AUTUMN TERM Y6

By the end of this term children will know:

That the Internet is the connections made between computers which allows information to be shared,

That the World Wide Web is the information accessed through the Internet.

That the World Wide Web was created by Sir Tim Berners-Lee

That the school has a LAN (Local Area Network) that connects all our computers together through a server.

That it is important to identify credible and secure sites and ensure information used is accurate.

That our online presence can be described as our Digital Footprint

That our online presence can be viewed by others forever and that it can affect how others see us.

That their are official ways to to report content which they find upsetting or disturbing.

What a PEGI rating is.

Why they need to keep information private

Why it is important to monitor their screen time and ensure a healthy balance between online and real-life experiences.

SPRING TERM Y6

By the end of this term children will know:

That a flowchart can be used to create and debug complex programs

When and how to decompose a problem.

That code can be simplified using abstraction

When to use sequences, selection and repetition in their code.

That variables such as sound, movement and clicks can be used as inputs and outputs.

That code can be used to control physical systems.

SUMMER TERM Y6

By the end of this term children will know:

That web pages are ranked using known criteria

That some results are ranked higher because they are sponsored posts.

That the credibility of the online content should be carefully and critically checked before sharing

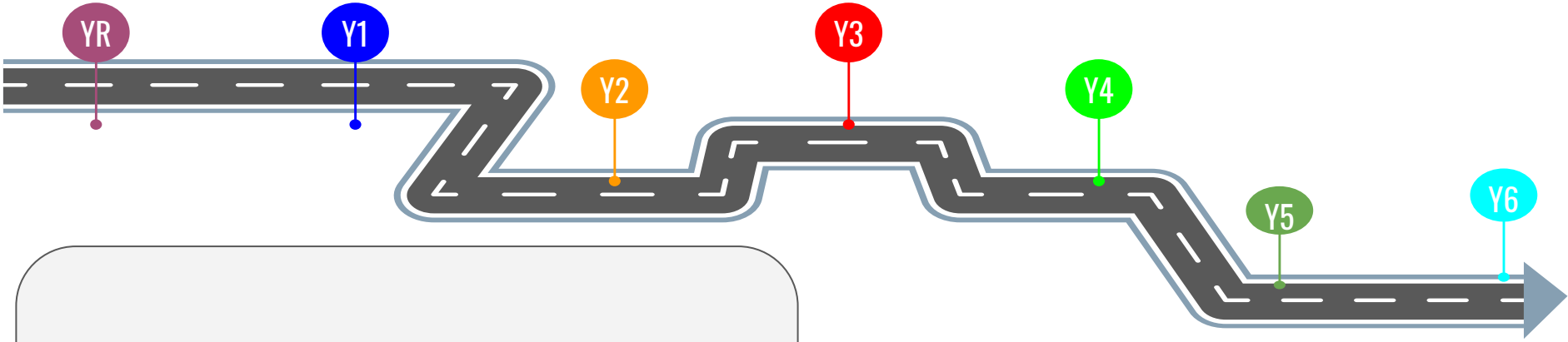
The purpose of writing a blog.

Why it is important to write content which engages the audience.

That changing the visual properties of a blog can impact on its appeal.

That it is important to contribute responsibly and respectfully to the blogs of others.

Houghton Primary School: COMPUTING



COMPUTING CURRICULUM **IMPACT:**

ASSESSMENT

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

Assessment Statement:

Assessment of computing **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 low stakes quizzes and similar activities. Knowledge is revisited over the course of the year to support long term memory and retrieval.