CURRICULUM INTENTION

At Welton, we aim to deliver a computing curriculum that is built around developing self-regulating and metacognitive learners as well as giving our pupils the life-skills that will enable them to embrace and utilise new technology in a socially responsible and safe way.

Our children will become digitally literate whilst also developing creativity and critical thinking to thrive. Our learners will have a deep understanding of their role within a wider global community and understand their responsibilities as digital citizens. We aim to use technology to support learning across the entire curriculum and to ensure that our curriculum is accessible to every child.

INTENT OF THE COMPUTING CURRICULUM

The intent of the Welton Computing Curriculum:

The pupils are:

- Enthusiastic and have an appreciation of Computing via engaging and well-planned lessons, allowing pupils to use their skills to create and develop new ideas.
- Able to identify real world examples and creative challenges in which pupils can explore and extend their understanding of the fundamental principles and concepts of Computing.
- Able to develop a respectful and responsible attitude towards using information and communication technology, especially with regards to their own and other's safety.
- Provided with a safe space in which pupils can navigate and interact with the digital world, whilst exploring their own personal expression and identity.

COMPUTING SKILLS PROGRESSION

Key stage 1

Pupils should be taught to:

- 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
- use technology purposefully to create, organise, store, manipulate and retrieve digital content
- 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.

Assessment

At Welton we understand the difference between knowledge which will be retained close to the point of teaching and that what has to be retained forever.

At key stage one the knowledge our children acquire takes full account of the national curriculum's main characteristics of:

- Computer science

- Digital literacy
- Information Technology
- E-safety

Key Stage 2

Pupils should be taught to:

- design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- 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 search technologies effectively, appreciate how results are selected and ranked, 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
- use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Assessment

At Welton we understand the difference between knowledge which will be retained close to the point of teaching and that what has to be retained forever.

At Key stage two the knowledge our children acquire takes full account of the national curriculum's main characteristics of:

- Computer science
- Digital literacy
- Information Technology
- E-safety

COMPUTING SCHEME OF LEARNING

Each scheme of learning taught should contain the main curriculum principles:

- Children can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- Children can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- Children can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- Children are responsible, competent, confident and creative users of information and communication technology.

	YEAR 1 & 2
Digital Literacy and E-safety	• To log in safely and understand why that is important. • To create an avatar and to understand what this is and how it is used. • To be able to create a picture and add their own name to it. • To start to understand the idea of 'ownership' of creative work. • To save work to the My Work area and understand that this is private space. • To learn how to find saved work in the Online Work area. •To learn about what the teacher has access to in Purple Mash. • To learn how to see messages left by the teacher on their work. • To learn how to search Purple Mash to find resources. • To become familiar with the types of resources available in the Topics section. • To become more familiar with the icons used in the resources in the Topics section. • To start to add pictures and text to work. • To explore the Tools area of Purple Mash and to learn about the common icons used in Purple Mash for Save, Print, Open, New. • To explore the Games area on Purple Mash. • To understand the importance of logging out when they have finished. • To find and understand examples of where technology is used in the local community. • To record examples of technology outside school. • To know how to refine searches using the Search tool. • To know how to share work electronically using the display boards. • To use digital technology to share work on Purple Mash to communicate and connect with others locally.

	• To have some knowledge and understanding about sharing more globally on the Internet. • To introduce Email as a communication tool using 2Respond simulations. • To understand how we talk to others when they are not there in front of us. • To open and send simple online communications in the form of email. • To understand that information put online leaves a digital footprint or trail. • To begin to think critically about the information they leave online. • To identify the steps that can be taken to keep personal data and hardware secure. • To understand the terminology associated with the Internet and searching. • To gain a better understanding of searching the Internet. • To create a leaflet to help someone search for information on the Internet. • To know how to refine searches using the Search tool. • To know how to share work electronically using the display boards. • To use digital technology to share work on Purple Mash to communicate and connect with others locally. • To have some knowledge and understanding about sharing more globally on the Internet. • To introduce Email as a communication tool using 2Respond simulations. • To understand how we talk to others when they are not there in front of us. • To open and send simple online communications in the form of email. • To understand that information put online leaves a digital footprint or trail. • To begin to think critically about the information they leave online. • To identify the steps that can be taken to keep personal data and hardware secure
Computer Science	• To emphasise the importance of following instructions. • To follow and create simple instructions on the computer. • To consider how the order of instructions affects the result. • To sort items using a range of criteria. • To sort items on the computer using the 'Grouping' activities in Purple Mash. • To understand the functionality of the basic direction keys in Challenges 1 and 2. • To be able to use the direction keys to complete the challenges successfully. • To understand the functionality of the basic direction keys in Challenges 3 and 4. • To understand how to create and debug a set of instructions (algorithm). • To use the additional direction keys as part of their algorithm. • To understand how to change and extend the algorithm list. • To create a longer algorithm for an activity. • To provide an opportunity for the children to set challenges for each other.

	• To provide an opportunity for the teacher to add these challenges to a display board for the class to try.
Information Technology	• To show that the information provided on pictograms is of limited use beyond answering simple questions. • To use yes/no questions to separate information • To construct a binary tree to separate different items. • Use 2Question (a binary tree) to answer questions • To use a database to answer more complex search questions. • To use the Search tool to find information. • To understand the differences between traditional books and e-books. • To explore the tools of 2Create a Story's My Simple Story level. • To save the page they have created. • To add animation to a picture. • To play the pages created so far. • To save the additional changes and overwrite the file. • To add a sound effect to a picture. • To add a voice recording to the picture. • To add created music to the picture. • To add a background to the story. • To demonstrate a good understanding of all the tools they have used in 2Create a Story and use these successfully to create their own story. • To use the copy and paste feature to create additional pages. • To continue and complete an animated story. • To create a class display board of the story books created by the class.

	Year 3 & 4
Digital Literacy and E-safety	• To know what makes a safe password, how to keep passwords safe and the consequences of giving your passwords away. • To understand how the Internet can be used to help us to communicate effectively. • To understand how a blog can be used to help us communicate with a wider audience. • To consider if what can be read on websites is always true. • To look at a 'spoof' website. • To create a 'spoof' webpage. • To think about why these sites might exist and how to check that the information is accurate. • To learn about the meaning of age restrictions symbols on digital media and devices. • To discuss why PEGI restrictions, exist. • To know where to turn for help if they see inappropriate content or have inappropriate contact from others. • To think about the different methods of communication. • To open and respond to an email. • To write an email to someone from an address book. • To learn how to use email safely. • To add an attachment to an email. • To explore a simulated email scenario. • To understand how children can protect themselves from online identity theft. • To understand that information put online leaves a digital footprint or trail and that this can aid identity theft. • To identify the risks and benefits of installing software including apps. • To understand that copying the work of others and presenting it as their own is called 'plagiarism' and to consider the consequences of plagiarism. • To identify appropriate behaviour when participating or contributing to collaborative online projects for learning. • To identify the positive and negative influences of technology on health and the environment. • To understand the importance of balancing game and screen time with other parts of their lives.
Computer Science	• To review previous coding knowledge. • To understand what a flowchart is and how flowcharts are used in computer programming. • To understand that there are different types of timers.

	• To be able to select the right type of timer for a purpose. • To understand how to use the repeat command. • To use coding knowledge to create a range of programs. • To understand the importance of nesting. • To design and create an interactive scene. • To review coding vocabulary and knowledge. • To create a simple computer program. • To begin to understand selection in computer programming. • To understand how an IF statement works. • To understand how to use co-ordinates in computer programming. • To understand how an IF statement works. • To understand the Repeat until command. • To begin to understand selection in computer programming. • To understand how an IF/ELSE statement works. • To understand what a variable is in programming. • To use a number variable. • To review vocabulary and concepts learnt in Year 4 Coding. • To create a playable game. • To learn the structure of the language of 2Logo. • To input simple instructions in 2Logo. • To use 2Logo to create letter shapes. • To use the Repeat command in 2Logo to create shapes. • To use and build procedures in 2Logo.

Information Technology	• To add and edit data in a table layout. • To find out how spreadsheet programs can automatically create graphs from data. • To introduce the 'more than', 'less than' and 'equals' tools. • To introduce the 'spin' tool and show how it can be used to count through times tables. • To introduce the Advanced mode of 2Calculate. • To learn about describing cells using their addresses. • To sort objects using just YES/NO questions. • To complete a branching database using 2Question. • To create a branching database of the children's choice. • To create a branching database of the children's choice. • To find out what a simulation is and understand the purpose of simulations. • To explore a simulation, making choices and discussing their effects. • To work through and evaluate a more complex simulation.
	YEAR 5 & 6
Digital Literacy and E-safety	•To gain a greater understanding of the impact that sharing digital content can have. •To review sources of support when using technology. •To review children' responsibility to one another in their online behaviour. •To know how to maintain secure passwords. •To understand the advantages, disadvantages, permissions, and purposes of altering an image digitally and the reasons for this. •To be aware of appropriate and inappropriate text, photographs and videos and the impact of sharing these online. •To learn about how to reference sources in their work. •To search the Internet with a consideration for the reliability of the results of sources to check validity and understand the impact of incorrect information. •Ensuring reliability through using different methods of communication. •To identify benefits and risks of mobile devices broadcasting the location of the user/device, e.g., apps accessing location. •To identify secure sites by looking for privacy seals of approval, e.g., https, padlock icon. •To identify the benefits and risks of giving personal information and device access to different software. •To review the meaning of a digital footprint and understand how and why people use their information and online presence to create a virtual image of themselves as a user. •To have a clear idea of appropriate online behaviour and how this can protect themselves and others from possible online dangers, bullying and inappropriate behaviour. •To begin to understand how information online can persist and give away details of those who share or modify it.

	•To understand the importance of balancing game and screen time with other parts of their lives, e.g., explore the reasons why they may be tempted to spend more time playing games or find it difficult to stop playing and the effect this has on their health. •To identify the positive and negative influences of technology on health and the environment.
Computer Science	• To review existing coding knowledge. • To be able to simplify code. • To create a playable game. • To understand what a simulation is. • To program a simulation using 2Code. •To know what decomposition and abstraction are in Computer Science. •To take a real-life situation, decompose it and think about the level of abstraction. •To use decomposition to make a plan of a real-life situation. •To understand how to use friction in code. •To begin to understand what a function is and how functions work in code. •To understand what the different variable types are and how they are used differently. •To understand how to create a string. •To begin to explore text variables when coding. •To understand what concatenation is and how it works. • To design a playable game with a timer and a score. • To plan and use selection and variables. • To understand how the launch command works. • To design a playable game with a timer and a score. • To plan and use selection and variables. • To understand how the launch command works. • To use functions and understand why they are useful. • To understand how functions are created and called. • To use flowcharts to test and debug a program. • To create a simulation of a room in which devices can be controlled. • To understand the different options of generating user input in 2Code. • To understand how user input can be used in a program. • To understand how 2Code can be used to make a text-based adventure game. •To understand the need for visual representation when generating and discussing complex ideas. •To understand the uses of a 'concept map'. •To understand and use the correct vocabulary when creating a concept map. •To create a concept map.

	•To understand how a concept map can be used to retell stories and information. •To create a collaborative concept map and present this to an audience. •To find out what a LAN and WAN are. •To find out how we access the internet in school. •To research and find out about the age of the internet. •To think about what the future might hold.

Information Technology	•To use formulae within a spreadsheet to convert measurements of length and distance.
	•To use the count tool to answer hypotheses about common letters in use.
	•To use a spreadsheet to model a real-life problem.
	•To use formulae to calculate area and perimeter of shapes.
	•To create formulae that use text variables.
	•To use a spreadsheet to help plan a school cake sale.
	• To learn how to search for information in a database.
	• To contribute to a class database.
	• To create a database around a chosen topic.
	  • To be introduced to the 2Design and Make tool.
	  • To explore the effect of moving points when designing.
	  • To design a 3D model to fit certain criteria.
	  • To refine and print a model.