Purpose

Computing is a subject which gives us an insight into how digital systems work and are applicable to the world around us.

Intent

At Frimley, teaching and learning in computing aims to instil a sense of enjoyment around using technology and to develop pupils' appreciation of its capabilities and the opportunities technology offers to create, manage, organise and collaborate. We want to develop pupils' confidence when encountering new technology as this is a vital skill in the ever evolving and changing landscape of technology. Through our curriculum, we intend for pupils not only to be digitally competent and have a range of transferable skills at a suitable level for the future workplace but also to be responsible online citizens.

Our computing curriculum enables pupils to meet the end of Key Stage Attainment targets outlined in the National Curriculum and associated areas of learning in subjects such as PSHE. It also satisfies all of the objectives of the DfE's Education for a Connected World framework. The use of technology is also planned across different areas of the curriculum, where appropriate, to enhance learning experiences and to provide opportunities for pupils to creatively present their work. The computing curriculum aims to help equip children for life in the digital world, including developing their understanding of appropriate online behaviour, copyright issues, being discerning consumers of online information and healthy use of technology.

Implementation

- We use a mastery-based curriculum that is progressive and broken into modules.
- Teachers deploy the Rosenshine principles to support the teaching and learning process: reviews of previous learning, new information is presented in small steps, high-level questioning, carefully considered models, guided practice, checks for pupil understanding, obtainment of a high success rate, scaffolds for difficult tasks, opportunities for independent practice and reviews of learning over extended periods.
- Our computing curriculum is designed with three strands that run throughout: computer science, information technology and digital literacy. The units taught incorporate these three strands whilst skills develop year on year so that attainment targets are securely met by the end of Key Stage 2.
- The curriculum is organised into five key areas, creating a cyclical route through which pupils can develop their computing knowledge and skills by revisiting and building on previous learning. The five areas are computing systems and networks, programming, creating media, data handling and online safety.
- Skills showcase units provide pupils with the opportunity to learn and apply transferrable skills.
- Where meaningful, units link to other subjects such as science, art and music to enable the development of further transferable skills and cross-curricular learning.
- Lessons incorporate a range of teaching strategies from independent tasks, paired and group work as well as unplugged and digital activities – this variety means that lessons are engaging and appeal to those with a variety of learning skills.
- Teaching and learning is adaptive to ensure lessons are accessible for all pupils and to provide opportunities to stretch pupils' learning.
- Knowledge organisers for each unit support pupils in building a foundation of factual knowledge by encouraging recall of key facts and vocabulary.
- At Frimley, we have 90 pupil iPads to support computing provision. The use of Showbie enables all children to save their work on their iPad and allows teachers to monitor outcomes.
- End of unit assessments are used to assess the children's understanding of crucial content; this informs future teaching and areas of focus for retrieval.
- Computing lessons are taught by a combination of class teachers and teachers delivering PPA lessons.
- Online safety is delivered in the form of worship, once a week. This is planned by the computing lead and content is progressive.
- The safe use of technology is monitored by teachers in all lessons where iPads are used through Apple Classroom and the Designated Online Safeguard Lead continuously monitors use.
- Parent workshops are provided to guide and advise parents on how to best support children to use technology sensibly and safely.
- Online safety letters and advise is regularly shared with parents.

- Pupils can apply to be Digital Leaders – selected children have the opportunity to attend additional sessions and an afterschool club to further develop their computing skills.
- Links to careers in computing are made to show how children's learning links to the wider world of work.
- As well as learning walks to observe teaching and learning, the Book Study approach is used to monitor the effectiveness of the computing curriculum, teaching and learning, to identify strengths and areas for development in provision and to garner pupil voice.

Impact

Children will:

- Leave Frimley equipped with a range of skills to enable them to succeed in their secondary education and be active participants in the ever-increasing digital world.
- Be critical thinkers and able to understand how to make informed and appropriate digital choices in the future.
- Understand the importance that computing will have going forward in both their educational and working life and in their social and personal futures.
- Understand how to balance time spent on technology and time spent away from it in a healthy and appropriate manner.
- Understand that technology helps to showcase their ideas and creativity. They will know that different types of software and hardware can help them achieve a broad variety of artistic and practical aims.
- Show a clear progression of technical skills across all areas of the National curriculum – computer science, information technology and digital literacy.
- Be able to use technology both individually and as part of a collaborative team.
- Be aware of online safety issues and protocols and be able to deal with any problems, worries and concerns in a responsible and appropriate manner.
- Have an awareness of developments in technology and have an idea of how current technologies work and relate to one another.
- Demonstrate a secure understanding of a unit's crucial learning and skills and knowledge in the end of unit assessment.
- Understand how their learning in computing links to the wider world of work.
- Meet the end of key stage 2 expectations outlined in the National curriculum for computing.

	Autumn	Spring	Summer
Year 3	**Computing systems and networks: Networks** Children will learn what a network is and how devices communicate and share information. They will also learn and demonstrate how a network works, explore the role of a router and identify the role of packet data.	**Computing systems and networks: Emailing** Children will develop their understanding of how we communicate with technology. They will learn how to send emails with attachments and will focus on the importance of being kind online, what cyberbullying is and how to recognise when an email is not genuine.	**Creating media: Video trailers** Developing their digital video skills, children will use iPads to create trailers with special effects and transitions. They will plan their trailer, take photos and videos to tell a story, develop their editing skills and use text and transitions.
	Programming: Scratch Exploring the programme Scratch, children will follow the predict > test > review cycle. They will also use 'loops' and programming when making an animation, a story and a game.	**Computing systems and networks: Journey inside a computer** Children will learn to recognise basic inputs and outputs. They will develop knowledge of the purpose of computer parts and their role and create paper versions of computers to consolidate understanding of how a computer works.	**Data handling: Comparison cards databases** Children will learn terminology around databases - records, fields and data. They will compare paper and computerised databases and how to sort, filter and interpret data. They will look at how to represent data in different ways as well as how to sort data for a purpose.
	Online safety Throughout the year, children will learn about the difference between fact, opinion and beliefs and how to deal with upsetting online content. They will focus on the importance of protecting personal information online and how to do this and will learn about the rules for social media platforms.		
Year 4	**Computing systems and networks: Collaborative Learning** Children will learn that software can be used to work collaboratively online. They will have opportunities to effectively contribute to someone else's work through exploring a range of collaborative tools, creating and sharing documents and analysing data.	**Creating media: Website design** Children will learn how web pages and sites are created and will plan content for a collaborative webpage. They will plan and create an engaging webpage and learn the skills needed to embed media and links.	**Programming: Computational thinking** In this introduction to computational thinking, children will learn about the four areas of abstraction, algorithm design, decomposition and pattern recognition. They will explore each to develop their understanding and will use the skills to effectively solve problems.
	Programming: Further coding with Scratch Revisiting the key features of the programme Scratch, children will use decomposition to identify key features of code. They will also begin to use 'variables' in code scripts and will develop their understanding of how to make a variable in Scratch.	**Skills showcase: HTML** Children will learn about the role of HTML in a web page. They will learn the markup language behind a webpage becoming familiar with HTML tags, changing HTML and CSS code to alter images and 'remixing' a live website.	**Data handling: Investigating weather** Through researching using online sources, children will learn how to log and store data on spreadsheets. They will design an automated machine to respond to sensor data and will use iPads to help present a weather forecast.
	Online safety Throughout the year, children will learn about what happens when searching online and how to make informed judgements about the probable accuracy of search results. They will look at how companies encourage us to buy online and how to recognise adverts and pop-ups. They will build on their learning of facts, opinions and beliefs, develop awareness of what a bot is and will also be encouraged to think about their own tech timetable and when we might need to limit use.		

Year 5	**Computing systems and networks: Search engines** Children will look at what a search engine is, how they work and how to use them. They will also learn about page rank and how to identify inaccurate information online.	**Programming: Programming music** Building on programming and music skills, children will revisit Scratch to create different sounds, beats and melodies. They will learn to tinker with Scratch music elements before planning and programming a soundtrack for a Battle of the Bands performance.	**Creating media: Stop motion animation** Children will explore stop-motion animation before planning their own stop-motion project. They will create animations, storyboard ideas and decompose a story into small parts before putting the elements together to create the illusion of a moving image.
	Data handling: Mars Rover Learning about the Mars Rover, children will identify how and why data is collected from space. They will read and calculate data using binary code, use simple operations to calculate bit patterns and will represent binary as text.	**Programming: Microbit** Children will use Microbit to tinker with a new piece of software. They will create algorithms and programs that are used in the real world and will use the 'predict, test and evaluate' cycle to create and debug programs with specific aims.	**Skills showcase: Mars Rover 2** Children will learn how bit patterns represent images as pixels. They will explore how the Mars rover moves, follows instructions, collects and sends data through the 'fetch-decode-execute' cycle. They will then showcase their skills by designing a functional tyre for the Mars rover using Tinkercad.
	Online safety Throughout the year, children will learn about online protection, app permissions and how apps can access personal information. They will learn about positive and negative aspects of online communication and about 'online reputation' and how online information can be used to form judgements. They will also revisit previous learning that online information is not always factual, explore how to deal with online bullying and look at how technology can affect our health and wellbeing.		
Year 6	**Computing systems and networks: Bletchley Park** Children will discover the history of Bletchley Park and learn about historical figures and the importance of code breaking and passwords. They will also design a computer of the future and create an audio advert for their designs.	**Data handling: Big data 1** Children will identify how barcodes and QR codes work and how infrared waves are used for the transmission of data. They will also recognise how RFID is used to input, analyse and evaluate real-world data.	**Data handling: Big data 2** Further developing understanding of how networks and the Internet are able to share information, children will look at how data can be safely transferred. They will investigate data usage of different online activities and learn how big data can be used to design smart buildings.
	Programming: Intro to Python Children will be introduced to Python. They will tinker with the new software, learn basic Python commands and how to create loops and nested loops when programming to make their code more efficient.	**Computing systems and networks: Exploring AI** Children will explore the basics of AI and recognise how AI processes and responds to text prompts. They will learn how AI can be used to explore and generate images and will apply AI-generated HTML code to the website Trinket. They will also explore and debate the ethical implications of AI.	**Skills showcase: Inventing a product** In this skills showcase unit, children will design an electronic product. They will code and debug a program and use CAD software for their design. They will also create a website for their product and will use technology to create a video advert.
	Online safety Throughout the year, children will look at life online, how online issues can result in negative feelings and how to get help. They will explore the impact and consequences of sharing online and how to create a positive online reputation. They will look at how to capture bullying content as evidence and how to manage personal passwords effectively. They will also be reminded of and made aware of further strategies that help protect people online.		