Computing Curriculum Scheme of Work – Reviewed 2023

Curriculum Intent and Vision Statement:

At Shottermill Junior School, we will provide a high-quality computing education that equips pupils to use become competent, confident and creative users of information and communication technology. We will teach discrete skills whilst also finding meaningful and relevant opportunities to relate learning to the wider curriculum and solving real-life problems. We will teach Computing through the key strands of Computer Science, Digital Literacy (E-Safety) and Information Technology.

- **Computing is taught in blocks, employing cross-curricular contexts to motivate children and support them to make connections and remember the steps they have been taught. The implementation of the curriculum also ensures a balanced coverage of computer science, information technology and digital literacy.**
- **The children will have experience of all three strands in each year group, but the subject knowledge imparted becomes increasingly specific and in depth, building on prior knowledge, as the skills taught become more complex.**
- **Developing an understanding of how to use technology safely and appropriately is fundamental to the modern world and consequently an essential part of children's learning. Online safety and digital awareness is woven throughout the school year and highlighted on themed days such as Safer Internet Day.**
- **We have laptops, chrome books and iPads to ensure that all year groups have the opportunity to use a range of devices and programmes for many purposes across the wider curriculum, as well as in discrete computing lessons.**

Our aim is that children will also develop competency with using Google Classroom, Google Drive and other online platforms ready for secondary school.

Implementation of Computing at our school:

All children will be taught at least 1 hour of Computing each week as a discrete subject but opportunities will be embedded into other curriculum areas. Pupils with additional special educational needs will also be provided with technology and applications to help them access their learning more successfully.

Through the sequence of lessons planned, we intend to inspire pupils to develop a love of the digital world, see its place in their future and give teachers confidence. Cross-curricular links are also important in supporting other areas of learning. Our lesson plans and resources help children to build on prior knowledge at the same time as introducing new skills and challenges. In UKS2, the focus is on developing the use of data handling and applying their use of multimedia more independently, and continues to develop their understanding of algorithms, programming and coding but in a more complex way and for different purposes. Across the years, children also develop their knowledge of computer networks, internet services and the safe and purposeful use of the internet and technology.

E-safety is taught at the start of each half term, along with the e-safety PSHE lessons covered through Jigsaw. At Shottermill Junior School, we routinely review the e-safety issues and risks that our pupils report or are likely to experience. We use this information to help us adjust our lessons and respond to concerns. We draw on information from the Local Authority and in particular, our neighbouring secondary schools to help keep us up to date as we recognise that technology moves quickly and the risks are ever-changing. We have identified that the predominant issues are related to use of mobile phones outside of school and we are therefore mindful to tailor sessions towards tackling these issues. We also regularly communicate with parents around the age limits of games which children play at home.

The following educational trips and special activities will enhance the teaching and learning in this subject:

Assemblies will enhance teaching and learning around E-Safety – particularly Internet Safety Day in February each year. After school clubs and ECAs link to Computing skills such as Touch Typing, Kahoot or TT Rockstars class competition. Parent E-Safety Workshops are offered every year to help offer advice and guidance on protecting children online when at home.

Scheme of work to be taught:

The planning of E Safety units draw upon Common Sense Education scheme.

Year 3	Year 4
My Online School Community - Use of programmes/apps and apps in Junior School • Understand the technology school rules • Using the online programmes for homework e.g. Google Classroom, TT rockstars, Mathletics **Use of Word Processor** • Typing skills and amending text • cut and paste • Adding a text boxes and pictures **Algorithms using Probots** • Enter a sequence of instructions to move a floor robot to a designated point incorporating turns • Use the repeat key to produce symmetrical shapes • Write a list of commands to produce a pre-drawn shape and amends instructions as required **IMovie (linked to English)** • Create and edit a movie, including inserting titles, images and voice overs • Download and insert images from the internet • Cut and trim images and voice overs **Computing systems and network- connecting computers** • Explain how digital devices function, how a computer network can be used to share information and how digital devices can be connected, • Identify input and output devices, and recognise the physical components of a network **Programming using scratch - an introduction to Scratch and creating conversations** • Use a selection of controls including changing direction, backgrounds, sprites and timings in programs to achieve the goal of conversations. • Design a solution by breaking a problem up • Use logical reasoning to detect problems in algorithms and debug them.	**Filming and editing poetry using IMovie, building on Year 3 work** • Create and edit a movie, including suitable themes, filming, text changes, music and sound effects. • Cut and trim videos and music to fit the purpose. **Use of PowerPoint / Google Slides** • Use **PPT** to develop slides, insert text using different fonts, colours and transfer pictures to accomplish given goals. • Make use of google slides to share information and support learning both in and out of school. • Create slides for a range of purposes and audiences • Make use of google slides to share information and support learning both in and out of school. **Basic animation using iMotion** • Explain how computer software has improved animation techniques. • Use small movements between each take and think about how the movements will look overall to create an imotion animation **Computing systems and networks- The Internet** • Consider how networks physically connect to other networks and how networked devices make up the internet • Learn how websites can be shared via the World Wide Web (WWW) and describe how content can be added and accessed • Learn how the content of the WWW is created by people and evaluate the consequences of unreliable content **Use of BBC Microbits (handheld programmable computers)** • To read and interpret a range of algorithms • To evaluate algorithms • To create and write algorithms for a given purpose or audience **Programming using scratch – Times tables game** • Embed use of a selection of controls including changing direction, backgrounds, sprites and timings in programs to achieve the goal of conversations. • Use a variety of algorithms including if/then and if then/else variables. • Begins to make use of user testing and feedback as well as logical reasoning to debug and correct errors in programs.

Year 5	Year 6
Advanced programming using Scratch – Game creation • Consolidates and extends the use of variables previously taught (e.g. use of multiple backgrounds and sprites). • Use advance algorithms to control more than one item and work with a variety of variables, including the new variables: controlling multiple variables, scoring, forever loops, use of axis to determine movements, hide and show conditions. • Greater focus on user input and response. • Solve more complex problems by decomposing them into smaller parts and use tester feedback. • Use logical reasoning to explain how algorithms work and how to debug algorithms. **Excel formulas and using simple formulae** • Be introduced to why we use spreadsheets in real life and the vocabulary associated with this *e.g. cell, format, formulae.* • Use a spreadsheet to calculate and present data • Use formulae and conditional formatting in a spreadsheet **Computing systems and networks – Sharing Information** • Explain that computers can be connected together to form systems and recognise the role of computer systems in our lives • Recognise how information is transferred over the internet and explain how sharing information online lets people in different places work together • Contribute to a shared project online and evaluate different ways of working together online **3d modelling software (Sketch up)** • Within sketch up, can Draw 2D shapes or lines and 3D models. • Can Manipulate 2D shapes into 3D shapes. • Can use a range of tools including: *shape, push, pull, orbit, pan, zoom, erase, fill.* **Radio Stations (Podcasts and Advertising)** • Record and play their own sounds in recording software • Import an existing sound file into recording software to play **Advanced use of Crumble Kits** • Programme motor controls, using inputs and variables • Using Crumble to create a simple circuit connected to a computer • Explain what an infinite loop does and explain that under certain conditions a loop can stop. Use a count control loop to control this. • Learn how to connect the sparkle (light) to the Crumble controller.	**Programming using Hopscotch - independently writing a programme from start to finish.** • Understand how to draw curves in hopscotch using the x and y axis and angles and can use this to program hopscotch to write initials. • Understands how to create a platform game in Hopscotch and can adapt this to design and create own game • Use logical reasoning to explain how algorithms work and how to debug algorithms **Computing systems and networks – Communication** • Identify how to use a search engine. • Describe how search engines select results, explain how search results are ranked, and recognise why the order of results is important, and to whom • Recognise how we communicate using technology and evaluate different methods of online communication **Advanced programming using Scratch – Maths Games** • Consolidates and extends the use of variables previously taught. • Use a selection of new controls including repeat x loops, repeat until, randomisation, input into a list and replace/ delete/set commands. • Solve more complex problems by decomposing them into smaller parts and use tester feedback. • Use logical reasoning to explain how algorithms work and how to debug algorithms • Use advance algorithms to control more than one item and work with a variety of variables, including variables in a loop. **Multimedia use – word/publisher/excel/PowerPoint- link to Year 6 Business Project** • Application of skills learned in previous units across KS2, building to a large scale real-life project where children create their own mini Enterprise Business, culminating in a real life fair for the school community to buy products. • Collect, analyse, evaluate and present data and information using a wide range of programmes including Google Slides, Google Docs and Google Sheets. • Create mini movies after the event to capture the fair and products sold. **Fairground Rides using Crumble Kits - (Linked and referenced in DT Planning)** • Plan and develop a moving mechanism with an electronic component using Crumble programming, using skills learnt in Year 5. • Use Crumble to program the ride to light up and move, using the sparkle lights. • Connect a geared motor and program the motor to spin forwards and backwards at different speeds. • Design a fairground model and use coding to make their model move.

Shottermill E-Safety Coverage / Digital Literacy			
Year 3	**Year 4**	**Year 5**	**Year 6**
E-safety units: • MEDIA BALANCE & WELL-BEING - Device-Free Moments • PRIVACY & SECURITY - That's Private! • DIGITAL FOOTPRINT & IDENTITY - Digital Trails • RELATIONSHIPS & COMMUNICATION - Who Is in Your Online Community? • CYBERBULLYING, DIGITAL DRAMA & HATE SPEECH - Putting a STOP to Online Meanness • NEWS & MEDIA LITERACY - Let's Give Credit! **JIGSAW E-Safety:** • Healthy Me -Keeping safe online and offline • Relationships -Keeping safe online and who to go to for help **E-safety within computing units:** • My online school community • Computer systems and networks – connecting computers	**E-safety units:** • MEDIA BALANCE & WELL-BEING - Your Rings of Responsibility • PRIVACY & SECURITY - Password Power-Up • DIGITAL FOOTPRINT & IDENTITY - This Is Me • RELATIONSHIPS & COMMUNICATION - Our Digital Citizenship Pledge • CYBERBULLYING, DIGITAL DRAMA & HATE SPEECH - The Power of Words • NEWS & MEDIA LITERACY - Is Seeing Believing? **E-safety within computing units:** • Computer systems and networks– The internet • Google Slides on Google Classroom	**E-safety units:** • CYBERBULLYING, DIGITAL DRAMA & HATE SPEECH - Be a Super Digital Citizen • RELATIONSHIPS & COMMUNICATION - Keeping Games Fun and Friendly **JIGSAW E-safety:** • Relationships - Safe online communications • Relationships - Rights and responsibilities online • Relationships - Online gambling and gaming • Relationships - Reducing screen time • Relationships - Dangers of online grooming • Relationships -SMARRT internet safety rules **E-safety within computing units:** • Computer systems and networks – sharing information	**E-safety units:** • MEDIA BALANCE & WELL-BEING - Finding My Media Balance • PRIVACY & SECURITY - You Won't Believe This! • DIGITAL FOOTPRINT & IDENTITY - Beyond Gender Stereotypes • RELATIONSHIPS & COMMUNICATION - Digital Friendships • CYBERBULLYING, DIGITAL DRAMA & HATE SPEECH - Is It Cyberbullying? • NEWS & MEDIA LITERACY - Reading News Online **JIGSAW E-Safety:** • Relationships - Technology safety • Relationships - Take responsibility with technology use **E-safety within computing units:** • Search engines and reliable sources of information • Communication online