Sibertswold Computing Progression of Knowledge and Skills

Computing Intent, Implementation and Impact

Intent	*The Computing intent with links to school intent:* Our children should be able to build on **prior knowledge** acquired through themed lessons and incidental learning opportunities. Children should have a solid foundation of key computing concepts and skills. Our children will be able to use a range of subject-specific **resources** to help with their learning. Our children should also be **reflective** computer scientists. As well as acquiring key knowledge, they must be able to critical thinkers and should be able to identify errors, debug code and choose appropriate tools to be able to carry out tasks. Children at Sibertswold will have a good awareness of E-Safety and how to use the internet and social media responsibly and safely. Finally the children will consider the place that technology has in our lives, and how technological advances impact on people and culture. Our children should be given the opportunity to quench their **curiosity** by being exposed to immersive and experiential learning. Children should have to opportunity to go on educational visits and have themed days and events in order to **make connections** and build their own technology based schemas and other subjects. We will ensure that all units cover key concepts of: *Digital Literacy* (learning how to use technology safely and responsibly, recognising acceptable and unacceptable behaviour, identify where to go for help and support when they have concerns about content or contact on the internet, recognise common uses of information technology beyond school, be discerning in evaluating digital content and understand the opportunities networks offer for communication and collaboration), *Information Technology* (learning how to use technology purposefully to create, organise, store, manipulate and retrieve digital content, selecting, using and combining a variety of software 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. Using search technologies effectively) and *Computer Science* (understanding what algorithms are, how they are implemented as programs on digital devices and that programs execute by following precise and unambiguous instructions, use logical reasoning to predict the behaviour or simple programs, explain how some simple algorithms work and detect and correct errors in algorithms and programs, design, write and debug programs that accomplish specific goals, including controlling or stimulating physical systems; solve problems by decomposing them into smaller parts, using sequence, selection and repetition in programs; work with variables and various forms of input and output, understand computer networks including the internet; how they can provide multiple services, such as the WWW; and the opportunities that they offer for communication and collaboration, appreciate how search results are selected and ranked. The repetition of these key concepts will aid the children in the development of their computer science schemas.

Implementation	Action Points • We will teach Computing as a discrete lesson each week and be explicit that it is a 'Computing' lesson. • Ensure the use of correct vocabulary across all year groups. • Investigate the use of 'problem solving tasks' to assess children's understanding • CPD for teachers using MrP ICT website	What I will be looking for from teachers and learning • Teachers plan and teach weekly engaging Computing lessons • Learning intentions should start 'As a computer scientist…… • Teachers should be identifying the use of technology in other areas of learning, and making use of the children's computing skills across the curriculum where relevant. • Teachers make use of the ICT CPD materials to improve subject knowledge. • Children are confident users of technology • Children can talk confidently about how to stay safe online and how to report any concerns over content or contact. • Recording for computing will be in a class book

Impact	*What should we see from the children at the end of each key stage:* Key Stage 1 Pupils should understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions. They should be able to create and debug simple programs and use logical reasoning to predict the behaviour of simple programs. Children should be able to recognise common uses of information technology beyond school and use technology purposefully to create, organise, store, manipulate and retrieve digital content. They should able to be able to 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. Key Stage 2 Pupils should be able to design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. They should use sequence, selection, and repetition in programs; work with variables and various forms of input and output and use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. Children should develop an understanding of 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. They should use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. Children should be able to 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. The will be able to use technology safely, respectfully and responsibly; recognise acceptable and unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Key Concepts and Vocabulary

	Key concepts	Key Vocabulary
Year 1	• Giving and following instructions • Creating digital text • Introducing data representation • Algorithms and programming • Computer modelling • E-Safety	algorithm, instruction, sequence, program, debug, repeat, true, false, data, tally, pictogram, model, choice, text, word processor, key, keyboard, save, print, backspace, return/enter, personal information, trusted adult, permission, cyber bullying,
Year 2	• Creating animations • Finding things out online • Creating E-Books • Writing/responding with blogging • Introduction to E-mail • Programming with Scratch JR • E-Safety	World Wide Web, Network, Hyperlink, internet, search, URL, personal information, trustworthy, untrustworthy, Trusted adult, online, device, eBook, algorithm, instruction, sequence, program, repeat, test, debug, email, email address, to, from, attachment, blog, post, comment, animation, scene, script, motion, storyboard, props
Year 3	• Games and animation development • Exploring computer simulations • Introducing networks • Introducing Databases • Internet, Searching and WWW • Editing Audio • E-Safety • Robotics	World Wide Web, Network, network switch, server, wireless access point (WAP), router, internet, hyperlink, search, URL, IP address, web browser, DNS copyright, field, record, data, database, search, sort, podcast, audio, record, track, edit, trim/crop, effects, program, sequence, selection, repeat, coordinates, x-y axis, import, test, debug, privacy settings, online sharing content, strong password, manipulation, simulation, rules, choice, variables
Year 4	• Making shapes and navigating mazes • Data representation • Working together with E-mail • Introduction to animation • Programming puzzle solutions • Scratch programming • E-Safety • Robotics or Algorithms	order, compare, measure, sort, select, algorithm, instruction, program, node, model, decomposition, abstraction, optimisation, logical reasoning, computational thinking, animation, frame, frame rate, frames per second (FPS), computer generated imagery (CGI), data, database, record, file, field, search, sort, chart, email, email address, to, from, attachment, forward, sequence, selection, condition, repeat, test, debug, privacy settings, keywords, copyright, strong password, spam, virus, cyberbullying
Year 5	• Designing and developing programs • Graphical drawing • Data and Cryptography • Creating Web Content • Developing multi-level games	cryptography, encrypt, decrypt, cipher, key, shift, binary, frequency analysis, vector, canvas, resize, rotate, fill, stomp, group, layer, zoom, send to front, send to back, bring forward, send backward, 2D, 3D, model, zoom in, zoom out, sequence, selection, condition, repeat, Boolean, variable, coordinates, x-y

	• 3D graphical modelling • E-Safety	axis, personal information, reliable, cyber bullying, SMART, World Wide Web, HTML, CSS, Element, tags
Year 6	• Designing and developing programs • Networks, data and HTML/CSS • Introducing Spreadsheets • Developing apps • Developing 3D animations • E-Safety	mobile, smart, phone, tablet, apps, technology, touch, communication, input, output, components, events, properties, test, bug, debug, program, code, android, IOS, operating system, hardware, software, conditional, handler, sprite, event handler, coordinates, x and y, procedure, function, variables, data, value, type, call, argument, design, plan, decomposition, algorithm, interface, interact, pseudo-code, amend, systematically, spreadsheet, worksheet, column, row, cell, cell reference, data, formula, range, SUM, network, router, internet, world wide web, IP address, URL, data, pocket, search engine, rank, HTML, sequence, selection, condition, repeat, Boolean, variable, procedure, personal information, reliable, cyber bullying, strong password, privacy settings