Eastbrook School Curriculum

Intent: A Character and Academics approach through Computing

At Eastbrook Primary School we appreciate that the society and community around us is becoming increasingly embedded with computing technology. This is why we advocate an approach towards computing that not only delivers in terms of the required curriculum but goes beyond this to incorporate elements of the children's probable day-to-day use some form of computing technology. We believe that this is best achieved through collaborative learning approaches, engaging the children in rich and varied content which can be applied to a range of curriculum areas and ensuring that the children have a sound technical and conceptual understanding of each area of the computing curriculum we deliver.

"A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world…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." National Curriculum

End Point (Key Stage 4)

The Computing department at Eastbrook School aim to equip learners with the skills to participate in a rapidly-changing world through challenging and engaging topics. Learners will develop an understanding and application in the fundamental principles of ICT and computer science by having the opportunity to write programs, design webpages and produce professional digital products.
Computing skills are a major factor in enabling children to be confident, creative and independent learners and it is our intention that children have every opportunity available to allow them to achieve this

Computing is a subject that directly impacts the individual lives of the students and that of the community around them. It is inevitable that our children, as they grow into the wider world, will be confronted with an increasing amount of technology in their daily lives. It is, therefore, vitally important that they possess the required knowledge, skill and understanding in order to use the technology at their fingertips to its greatest potential, all the while maintaining the highest regard for theirs and others safety whilst doing so.

Waypoints

By the end of Early Years Foundation Stage

Our children in Early Years provision will be exposed to the understanding of internet safety as they explore the world around them and how technology is an everyday part of their learning and understanding of the world. Through play, children will be encouraged to show interest in technological toys or real-life objects such as cameras and mobile phones. Children will use age appropriate software and complete simple programs on a computer.

By the end of Key Stage One

Pupils should be able 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

By the end of Key Stage Two

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
- 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

Sequencing

Sequencing in our computing curriculum ensures logical progression of skills as well as practical and meaningful ways for the children to exhibit and build upon the knowledge, skills and understanding

Adaptation

Our curriculum reflects the school's local context by addressing typical gaps in pupils' knowledge and skills. Significant factors impacting on pupils' knowledge and skills with regard to our local context are:

- The number of pupils in school with English as an Additional Language (EAL).
- The number of pupils in school with Speech, Language and Communication needs (SLC).
- The number of pupils in school with Social Emotional and Mental Health needs (SEMH).
- The high level of economic deprivation amongst pupils.
- The variation in cultural experience amongst pupils.

Mastery of this subject is something that is difficult to fully acquire due to the very nature of the technology involved and how quickly that small changes and revolutionary ideas are innovated in the field of computing technology. However, the approach taken at Eastbrook Primary School aims to ensure that the children are able to not only keep up with such changes as they happen but to aspire to be a part of the change making process by potentially being within the sector in the future. All of this alongside maintaining safety and security whilst online and using any piece of computing technology is placed at the heart of our computing curriculum and is key to ensuring that adaptation is as up to date as possible.

Transferable skills and knowledge

We believe that an effective Computing curriculum is not possible solely by teaching computing discreetly, it is something that must be and is embedded throughout the curriculum. Each use of a piece of computing technology should build upon the last and supplement the next time the technology is used. To this end, both computational and creative aspects of Computing can be found across the curriculum in different subjects. From creating posters of shapes in Maths, to writing and taking part in their own online quizzes in English, to designing timelines in History and developing their map skills in Geography. Within school, as within society in general, Computing and our knowledge of it is treated as something which can be used to enhance every aspect of our surrounding environment.

Appendix A: Curriculum Summary.

	We Are Storytellers	We Are Treasure Hunters	We are Collectors	We are Celebrating	We are TV Chefs	We are Painters
Year 1	NC: Use technology purposefully to create, organise, store, manipulate and retrieve digital content. NC: Recognise common uses of information technology beyond school. NC: Use technology safely and respectfully <u>SoC</u> Use sound recording equipment to record sounds. Develop skills in saving and storing sounds on the computer. Develop collaboration skills as they work together in a group. Understand how a talking book differs from a paper-based book. Talk about and reflect on their use of ICT. Share recordings with an audience.	NC: Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. NC: Create and debug simple programs. NC: Use logical reasoning to predict the behaviour of simple programs. NC: Recognise common uses of information technology beyond school. <u>SoC</u> Understand that a programmable toy can be controlled by inputting a sequence of instructions. Develop and record sequences of instructions as an algorithm. Program the toy to follow their algorithm. Debug their programs. Predict how their programs will work.	NC: Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. NC: Use technology purposefully to create, organise, store, manipulate and retrieve digital content. NC: 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. NC: Recognise common uses of information technology beyond school. <u>SoC</u> Find and use pictures on the web. Know what to do if they encounter pictures that cause concern. Group images on the basis of a binary (yes/no) question. Organise images into more than two groups according to clear rules. Sort (order) images according to some criteria. Ask and answer binary (yes/no) questions about their images.	NC: Use technology purposefully to create, organise, store, manipulate and retrieve digital content. NC: Recognise common uses of information technology beyond school. NC: 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. <u>SoC</u> Develop basic keyboard skills, through typing and formatting text. Develop basic mouse skills. Use the web to find and select images. Develop skills in storing and retrieving files. Develop skills in combining text and images. Discuss their work and think about whether it could be improved.	NC: Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. NC: Use technology purposefully to create, organise, store, manipulate and retrieve digital content. NC: Recognise common uses of information technology beyond school. NC: Use logical reasoning to predict the behaviour of simple programs. <u>SoC</u> Break down a process into simple, clear steps, as in an algorithm. Use different features of a video camera. Use a video camera to capture moving images. Develop collaboration skills. Discuss their work and think about how it could be improved.	NC: Use technology purposefully to create, organise, store, manipulate and retrieve digital content. NC: Recognise common uses of information technology beyond school. NC: 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. <u>SoC</u> Use the web safely to find ideas for an illustration. Select and use appropriate painting tools to create and change images on the computer. Understand how this use of ICT differs from using paint and paper. Create an illustration for a particular purpose. Know how to save, retrieve and change their work. Reflect on their work and act on feedback received.

	We are Researchers	We are Astronauts	We are Detectives	We are Game Testers	We are Photographers	We are Zoologists
Year 2	NC: Use technology purposefully to create, organise, store, manipulate and retrieve digital content. NC: Recognise common uses of information technology beyond school. NC: 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. <u>SoC</u> Develop collaboration skills through working as part of a group. Develop research skills through searching for information on the internet. Improve note-taking skills through the use of mind mapping. Develop presentation skills through creating and delivering a short multimedia presentation.	NC: Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. NC: Create and debug simple programs. NC: Use logical reasoning to predict the behaviour of simple programs. <u>SoC</u> Have a clear understanding of algorithms as sequences of instructions. Convert simple algorithms to programs. Predict what a simple program will do. Spot and fix (debug) errors in their programs.	NC: Use technology purposefully to create, organise, store, manipulate and retrieve digital content. NC: Recognise common uses of information technology beyond school. NC: 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. <u>SoC</u> Understand that email can be used to communicate. Develop skills in opening, composing and sending emails. Gain skills in opening and listening to audio files on the computer. Use appropriate language in emails. Develop skills in editing and formatting text in emails. Be aware of online safety issues when using email.	NC: Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. NC: Use logical reasoning to predict the behaviour of simple programs. NC: Recognise common uses of information technology beyond school. NC: Use technology safely and respectfully, keeping personal information private. <u>SoC</u> Describe carefully what happens in computer games. Use logical reasoning to make predictions of what a program will do. Test these predictions. Think critically about computer games and their use. Be aware of how to use games safely and in balance with other activities.	NC: Use technology purposefully to create, organise, store, manipulate and retrieve digital content. NC: Recognise common uses of information technology beyond school. NC: 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. <u>SoC</u> Consider the technical and artistic merits of photographs. Use a digital camera or camera app. Take digital photographs. Review and reject or rate the images they take. Edit and enhance their photographs. Select their best images to include in a shared portfolio.	NC: Use technology purposefully to create, organise, store, manipulate and retrieve digital content. NC: Recognise common uses of information technology beyond school. NC: 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. <u>SoC</u> Sort and classify a group of items by answering questions. Collect data using tick charts or tally charts. Use simple charting software to produce pictograms and other basic charts. Take, edit and enhance photographs. Record information on a digital map.

Year 3	We are Programmers	We are Bug Fixers	We are Presenters	We are Vloggers	We are Communicators	We are Opinion Pollsters
	NC: Design, write and debug programs that accomplish specific goals; solve problems by decomposing them into smaller parts. NC: Use sequence ... in programs; work with variables and various forms of input and output. NC: Use logical reasoning to detect and correct errors in algorithms and programs. NC: Select, use and combine a variety of software ... to design and create ... content that accomplish(es) given goals, including ... presenting ... information. <u>SoC</u> Create an algorithm for an animated scene in the form of a storyboard. Write a program in Scratch to create the animation. Correct mistakes in their animation programs.	NC: Debug programs that accomplish specific goals. NC: Use sequence, selection, and repetition in programs; work with variables and various forms of input and output NC: Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. <u>SoC</u> Develop a number of strategies for finding errors in programs. Build up resilience and strategies for problem solving. Increase their knowledge and understanding of Scratch. Recognise a number of common types of bug in software.	NC: 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. NC: Work with various forms of input and output. NC: Use technology safely, respectfully and responsibly. <u>SoC</u> Gain skills in shooting live video, such as framing shots, holding the camera steady, and reviewing. Edit video, including adding narration and editing clips by setting in/out points. Understand the qualities of effective video, such as the importance of narrative, consistency, perspective and scene length.	NC: Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web. NC: Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. NC: Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of content that accomplish given goals, including collecting, analysing, evaluating and presenting information. NC: Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. <u>SoC</u> Use a search engine to learn about a new topic. Plan, design and deliver an interesting and engaging presentation. Search for and evaluate online images. Create their own original images. Create a video slidecast of a narrated presentation. Develop understanding of how the internet, the web and search engines work.	NC: 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. NC: 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. NC: Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. <u>SoC</u> Develop a basic understanding of how email works. Gain skills in using email Be aware of broader issues surrounding email, including 'netiquette' and online safety. Work collaboratively with a remote partner. Experience video conferencing	NC: 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. NC: 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. <u>SoC</u> Understand some elements of survey design. Understand some ethical and legal aspects of online data collection. Use the web to facilitate data collection. Gain skills in using charts to analyse data. Gain skills in interpreting results.

Year 4	We are Software Developers	We are Toy Designers	We are Musicians	We are HTML Editors	We are Co-authors	We are Meteorologists
	NC: Design, write and debug programs that accomplish specific goals NC: Use sequence, selection and repetition in programs; work with variables and various forms of input and output NC: Use logical reasoning to explain how some simple algorithms and programs SoC Develop an educational computer game using selection and repetition Understand and use variables Start to debug computer programs Recognise the importance of user interface design, including consideration of input and output	NC: Design, write and debug programs that accomplish specific goals including controlling or simulating physical systems NC: Use sequence, selection and repetition in programs; work with variables and various forms of input and output NC: Use logical reasoning to explain how some simple algorithms and programs SoC Design and make an on-screen prototype of a computer-controlled toy Understand different forms of input and output (such as sensors, switches, motors, lights and speakers) Design, write and debug the control and monitoring program for their toy	NC: Use sequence, selection and repetition in programs; work with variables and various forms of input and output NC: Understand computer networks including the internet; … and the opportunities they offer for communication and collaboration NC: Be discerning in evaluating digital content NC: Select, use and combine a variety of software (including internet services) on a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information NC: Use technology safely, respectfully and responsibly: recognise acceptable/unacceptable behaviour SoC Use one or more programs to edit music Create and develop a musical composition, refining their ideas through reflection and discussion Develop collaboration skills Develop an awareness of how their composition can enhance work in other media	NC: 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 NC: Use technology safely, respectfully and responsibly; know a range of ways the report concerns and unacceptable behaviour NC: Use and combine a variety of software (including internet services) to accomplish given goals, including presenting information SoC Understand some technical aspects of how the internet makes the web possible Use HTML tags for elementary mark up Use hyperlinks to connect ideas and sources Code up a simple web page with useful content Understand some of the risks in using the web	NC: Solve problems by decomposing them into smaller parts NC: 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 NC: Use search technologies effectively NC: Use --- a variety of software (including internet services) … to … create... content... including … presenting information NC: Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact SoC Understand the conventions for collaborative online work particularly in wikis Be aware of their responsibilities when editing other people's work Become familiar with Wikipedia, including potential problems associated with its use Practise research skills Write for a target audience using a wiki tool Develop collaboration skills Develop proofreading skills	NC: Work with variables and various forms of input and output NC: Use logical reasoning to explain how simple algorithms work NC: Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content NC: 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 SoC Understand different measurement techniques for weather, both analogue and digital Used computer-based data log computer-based data logging to automate the recording of some weather data Use spreadsheets to create charts Analyse data, explore inconsistencies in data and make predictions Practise using presentation and optionally video

Year 5						
Year 6	**We are Adventure Gamers** NC: Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. NC: Use sequence, selection and repetition in programs; work with variables and various forms of input and output. NC: Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. <u>SoC</u> Learn some of the syntax of a text-based programming language. Use commands to display text on screen, accept typed user input, store and retrieve data using variables and select from a list. Plan a text-based adventure with multiple 'rooms' and user interaction. Thoroughly debug the program.	**We are Advertisers** NC: Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. NC: 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. NC: Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. <u>SoC</u> Think critically about how video is used to promote a cause. Storyboard an effective advert for a cause. Work collaboratively to shoot suitable original footage and source additional content, acknowledging intellectual property rights. Work collaboratively to edit the assembled content to make an effective advert.	**We are Computational Thinkers** NC: Design, write and debug programs that accomplish specific goals. NC: Use sequence, selection and repetition in programs; work with variables and various forms of input and output. NC: Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. <u>SoC</u> Develop the ability to reason logically about algorithms. Understand how some key algorithms can be expressed as programs. Understand that some algorithms are more efficient than others for the same problem. Understand common algorithms for sorting and searching. Appreciate algorithmic approaches to problems in mathematics.	**We are Network Technicians** NC: 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. NC: Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. <u>SoC</u> Appreciate that computer networks transmit and receive information digitally. Understand the basic hardware needed for computer networks to work. Understand key features of internet communication protocols. Develop a basic understanding of how domain names are converted to numerical IP addresses.	**We are Travel Writers** NC: 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. NC: Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. NC: 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. NC: Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. <u>SoC</u> Research a location online using a range of resources appropriately. Understand the safe use of mobile technology, including GPS. Capture images, audio and video while on location. Showcase shared media content through a mapping layer.	**We are Travel Writers** NC: 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. NC: Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. NC: 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. NC: Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. <u>SoC</u> Research a location online using a range of resources appropriately. Understand the safe use of mobile technology, including GPS. Capture images, audio and video while on location. Showcase shared media content through a mapping layer.