Computing Intent - Progression in skills

Computing - Primary Curriculum

Subject Intent Statement

Our aim is that all pupils should be taught 'Computational thinking' if they are to be able to participate effectively and safely in this digital world. A high-quality computing education equips pupils to use creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is Computer Science in which pupils are introduced to a wide range of technology, including laptops, iPads and interactive whiteboards, allowing them to continually practice and improve the skills they learn. This ensures they become digitally literate so that they are able to express themselves and develop their ideas through information and computer technology– at a level suitable for the future workplace and as active participants in a digital world.

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Key knowledge **Computer Science** Pupils should begin to be taught to: **1a** understand what algorithms are; how they are implemented as programs on digital devices; and that programs work by following precise and careful instructions **1b** create and debug simple programs **1c** use logical reasoning to begin to predict the behaviour of simple programs **Information Technology** Pupils should be taught to: **1d** use technology purposefully to create, organise, store, manipulate and retrieve digital content **Digital Literacy** Pupils should be taught to: **1e** recognise common uses of information technology beyond school **1f** 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 Knowledge** Pupils should be taught to: **1a** understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions **1b** create and debug simple programs **1c** use logical reasoning to predict the behaviour of simple programs **Information Technology** Pupils should be taught to: **1d** use technology purposefully to create, organise, store, manipulate and retrieve digital content **Digital Literacy** Pupils should be taught to: **1e** recognise common uses of information technology beyond school **1f** if 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 Knowledge:** **Computer Science** Pupils should begin to be taught to: **2a** design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts **2b** use sequence, selection, and repetition in programs; work with variables and various forms of input and output **2c** use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs **2d** 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 **Information Technology** Pupils should begin to know how to:- **2e** use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content **2f** 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,	**Key Knowledge:** **Computer Science** Pupils should consolidate their understanding of how to: **2a** design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts **2b** use sequence, selection, and repetition in programs; work with variables and various forms of input and output **2c** use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs **2d** 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 **Information Technology** Pupils should know how to:- **2e** use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content **2f** 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	**Key Knowledge:** . **Baseline Assessments** **Computer Science** **Coding/ Programming Studio Coding** Unit 2 LG 5d – design/ write programs LG 5e – debug programs LG 5f – use sequence LG 5g – use selection LG 5h – use repetition LG 5i – logical reasoning **Using Google/ understanding networks** LG 5j – multiple services on networks LG 5k – understand networks LG 5l – be discerning LG 5m – how results are selected/ ranked LG 5n – effective searching **Information Technology** **Introduction to Office 365**: Sending emails with attachments Collaborating on shared Word/ PPT using O365 LGs 5b and 5c - network communication/ collaboration **Adventure Story - PowerPoint Project** Collaborating on planning, writing, designing and creating a 'pick your path' interactive story. **Digital Literacy** E-Safety Poster/ Studio Coding Unit 2 E-Safety Common Sense Media Grades 3-5 Unit 1 (3 lessons) LG 5a - recognise appropriate/ inappropriate behaviour	**Key Knowledge:** **E-Safety** Common Sense Media Grades 3-5 Unit 2 LG 6a -use technology safely, respectfully and responsibly LG 6b - know how to report concerns about contact and content **Simulations** Use Flowol to create simulations of real-world control situations LG 6c - design/ write simulations LG 6f – work with various forms of input LG 6g – work with various forms of output **Coding/ Programming** Studio Coding Unit 3 LG 6d – decomposition LG 6e – work with variables LG 6h – detect and correct error **Movie Creator** Creating a movie on Climate Change including pictures, captions and music. Sharing on Office 365 – Video channel. LG 6i – design/ create a range of content LG 6j – select/ use/ combine software **Office Apps - Excel** Introduction unit (Gold Mine – Disney) LG 6k – collect data LG 6l – analyse data LG 6m – evaluate data LG 6n – present data **Website Design** Basic website and webpage design using Serif Web Plus (creative project)

		systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information **Digital Literacy** Pupils should consolidate their understanding of how to 2g use technology safely, respectfully and responsibly; recognise acceptable and unacceptable behaviour; identify a range of ways to report concerns about content and contact.	**Digital Literacy** Pupils should know how to:- 2g use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.		
Key Skills **Overarching** Problem solving Following instructions Willingness to do and undo **Subject specific** **Using technology** Use a wide range of technology and describe how it works in a variety of different contexts. Select the appropriate piece of technology for a particular purpose and communicate this. Begin to save their work to a folder and retrieve it when needed. Begin to edit and copy information using a variety of media. Film short scenes & edit with others. **Algorithms and programs** Explore an on screen turtle and navigate it around a course or grid and/or draw shapes by inputting a sequence of instructions. Begin to understand that the on screen turtle can be directed through the use of text. **Data retrieving and organising** Begin to present their data in different ways.	**Key Skills** **Overarching** Problem solving Following instructions Willingness to do and undo Developing resilience and independence **Subject specific** **Using technology** Select the appropriate piece of technology for a particular purpose and communicate this. Save their work to a folder and retrieve it when needed. Understand how to edit and copy information using a variety of media. Film short scenes & edit with others. **Algorithms and programs** Use an on screen turtle and navigate it around a course or grid and/or draw shapes by inputting a sequence of instructions. Understand that the on screen turtle can be directed through the use of text. Enter information into a basic computer simulation and explore the effects of changing the variables in simulations and discuss the benefits of using these simulations. Discuss the use of simulations and compare with reality.	**Key Skills:** **Overarching** Resilience Problem solving Experimentation Research Developing communication using a variety of medium **Subject specific** **Using technology** Know what the term browser is and can they use it to navigate a variety of programmes. Use tabbed browsing to open two or more web pages at the same time. Know how to use a wide variety of technology to suit a particular purpose. **Algorithms and programs** Use a computer to create basic applications, investigating how different variables can be changed Explore some simulations and evaluate them **Data retrieving and organising** Create a simple branching database, identifying objects and questions to classify data.	**Key Skills:** **Overarching** Resilience Problem solving Experimentation Research Confident communication in a variety of medium **Subject specific** **Using technology** Know what the term browser is and can they use it to navigate a variety of programmes. Use tabbed browsing to open two or more web pages at the same time. Know how to use a wide variety of technology to suit a particular purpose. Contribute to an online class blog. Open a variety of links and use them. **Algorithms and programs** Use a computer to create basic applications, investigating how different variables can be changed. Begin to use software to represent 3D objects or items. Explore some simulations and evaluate them. **Data retrieving and organising**	**Key Skills:** **Overarching** Resilience Problem solving Experimentation Research Confident communication in a variety of medium **Subject specific** **Using technology** To know that documents can be worked in individually and collaboratively To store, retrieve and share documents using the cloud. To create stories in the form of a presentation which allow the audience to choose alternative routes through the story. **Algorithms and programs** To create algorithms with sequences of elements To debug algorithms with sequences of elements To think logically and predict the effects of algorithms which use sequences of elements **Data retrieving and organising** To use search terms to find specific pieces of information using large scale databases	**Key Skills:** **Overarching** Resilience Problem solving Experimentation Research Confident communication in a variety of medium **Subject specific** **Using technology** To mix audio, video and still images. To share and evaluate creative work To match visual styles to a given audience **Algorithms and programs** To create algorithms with repeating elements To debug algorithms with repeating elements To think logically and predict the effects of algorithms which use repeating elements To use inputs to trigger a variety of outputs To show algorithms as flowcharts **Data retrieving and organising** To use spreadsheets to store data To use spreadsheets to process data To use spreadsheets to display data

Use a branching database to answer questions with help. **E-Safety** Follow the school's safer internet rules. Begin to know that everything on the internet is not true. Recognise that there are other people on the internet and this affects how they should use it. Know how to act if they find inappropriate content online. Tell a trusted adult if someone they don't know tries to contact them via the internet. Understand that they should only open an email from someone they know. Use the internet safely for learning and communicating with others. Recognise advertising on website and learn to ignore it. **Communicating / presentations** Send individual email in a controlled environment and reply. Develop speed when typing and use a simple document with increasing control. Word process work, changing the font, font size, colour. Cut, copy and paste an image, text box, word art and clipart onto a document. Format their text to refine and improve. e.g underline, italics, bold.	**Data retrieving and organising** Present their data in different ways. Use a branching database to answer questions. Amend teacher prepared graphs. **E-Safety** Follow the school's safer internet rules. Evaluate websites and know that everything on the internet is not true. Recognise that there are other people on the internet and this affects how they should use it. Know how to act if they find inappropriate content online. Tell a trusted adult if someone they don't know tries to contact them via the internet. Understand that they should only open an email from someone they know. Send and receive emails safely. Understand why passwords shouldn't be shared. Use the internet safely for learning and communicating with others. Recognise advertising on website and learn to ignore it. **Communicating / presentations** Learn that email is used beyond school Send individual email in a controlled environment and reply. Develop speed when typing and use a simple document with increasing control. Word process work, changing the font, font size, colour. Cut, copy and paste an image, text box, word art and clipart onto a document. Format their text to refine and improve. e.g underline, italics, bold. Produce an interactive presentation using a range of media. E.g. slide transition/ sound effects etc.	Work as a group to collect data on a pre-prepared data collection template. **E-Safety** As Key stage 1 plus 1a Understand and articulate that social networking sites carry risk. 1bUnderstand the benefit of developing a nickname for online use. 1cBehave appropriately online. Recognise that cyber bullying is unacceptable. 1d Recognise the dangers of communicating via a variety of devices such as Xbox live, PSP, phones etc. 1eExplain the difference between online communication tool used in school and those used at home. 1fUnderstand the need for caution when using the internet to search for images and what to do if they find an unsuitable image. 1gRecognise that information on the internet may not be complete, accurate or reliable. **Communicating /presentations** With help record video for a range of purpose, paying attention to the quality of the video capture. Use e-mail to e-mail work completed in school to their teachers and peers. Insert sound recordings into a multi- media presentation. Choose images and download into a file. Create a stop motion animation using ICT software. Capture images using a variety of technology eg webcams, screen capture, scanning, visualizer and internet Can they transfer graphics from a range of sources and use them in a desktop publishing program	Create a simple branching database, identifying objects and questions to classify data. Work as a group to collect data on a pre-prepared data collection template. Explain what a spreadsheet is. Use the terms cells, rows and columns. Create a database template. **E-Safety** Understand and articulate that social networking sites carry risk. Understand the benefit of developing a nickname for online use. Behave appropriately online. Recognise that cyber bullying is unacceptable. Recognise the dangers of communicating via a variety of devices such as Xbox live, PSP, phones etc. Explain the difference between online communication tool used in school and those used at home. Understand the need for caution when using the internet to search for images and what to do if they find an unsuitable image. Recognise that information on the internet may not be complete, accurate or reliable. **Communicating / presentations** Contribute to blog & wiki/forum etc. (linked to E safety) Independently record video for a range of purpose, paying attention to the quality of the video capture. Use e-mail to e-mail work completed in school to their teachers and peers. Insert sound recordings into a multi- media presentation. Choose images and download into a file. Create a stop motion animation using ICT software. Capture images using a variety of technology eg webcams, screen	To know some of the criteria that are used be search engines to rank results. To know that files may be retrieved from a range of storage places including; local drives, network drives, removable drives, cloud storage… **E-Safety** To recognise that sharing information has a balance of risks and benefits To treat their own and other's data with respect. To know about the SMART use internet use.	**E-Safety** To identify situations in which a person may be putting themselves at risk by sharing information To identify alternative actions to those which may create risk To identify ways of reducing risk when using information technology.

			capture, scanning, visualizer and internet. Transfer graphics from a range of sources and use them in a desktop publishing program		
Key Vocabulary Algorithm Browser Computer networks Control Data Debug Digital content Information Input Internet Logical reasoning Program Repetition Search	Selection Sequence Services Simulation Software Variables World Wide Web Headphones Switch Launch Application Window Minimise Save Folder	Open File Restore Size Move Screen Monitor Display Keyboard Mouse Close Exit	**Key Vocabulary:** Key stage 1 vocabulary plus Decomposition Tinkering Abstraction Debugging Evaluation Patterns Creating Logic Algorithms Collaborating Persevering	**Key Vocabulary:** Year 3 and 4 Vocabulary Plus Repetition Cloud Network Storage Drive Debug Slide Decision Input Output Sharenting **SMART**	**Key Vocabulary:** Year 4 and 5 Vocabulary Plus Cell Cell reference Function Flow Diagram Row Column Sum Average If loops When loops Forever loops Until loops SMART