ST. GEORGE'S CHURCH OF ENGLAND PRIMARY SCHOOL

# Computing

| Theological Underpinning: | | |
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| **Spiritual growth and development: some of the big questions asked** | **Biblical references offering insight** | **Theological underpinning – why is this subject important to us as Christians?** |
| • How can we see the patterns and order in nature?<br>• What provision do we need to make for ourselves, economically and by budgeting well? Why is money important?<br>• In what ways does Maths give us perspective and help us to be good stewards of what we are given?<br>• How does a sense of scale help one's understanding of the world?<br>• How do we actually go about solving problems and what part does evidence play?<br>• What is 'truth' and 'proof'? | • To one man he gave five talents, to another two, and to another one, based on their ability. Then he went on his trip. "The one who received five talents went out at once and invested them and earned five more." Matthew 25:14<br>• 'God blessed them and said to them, "Be fruitful and increase in number; fill the earth and subdue it. Rule over the fish in the sea and the birds in the sky and over every living creature that moves on the ground." Genesis 1:28<br>• 'So teach us to count our days, that we may gain a wise heart' Psalm 90 v12 | Great is the mystery of faith'. Sometimes mathematics appears to be a series of difficult problems and puzzles. With time, patience, faith and skill we can come to see that the universe is beautifully created, that there is design and order in what originally seemed chaotic. Mathematics shows us that seemingly disconnected things are in fact deeply connected, individual parts of God's one creation. The pattern of God's love is seen in the way balance is restored and difficulty reconciled, just as in Mathematics. |

# Computing Intent, Implementation and Impact

At St. George's, we teach in line with the National Curriculum to enable our children to become computational thinkers and be creative and critical in their view of the world. We make deep links with Maths, Science and Design and Technology which not only gives our children an understanding of themselves as individuals within their community, but also as responsible digital citizens in our ever-changing world. We want our children to be digitally literate and ready for future workplaces through the teaching of:

- **Computer Science** – the understanding of coding and programming across a range of physical devices and digital resources.
- **Information Technology** – the range of skills required to operate and manipulate specific programs, systems, and content.
- **Digital Literacy** – the knowledge required to use technology safely and to evaluate and react to any potential risks of the online/digital world.

Here at St Georges, teachers use the 'Switched On: Computing' scheme which is used for our computing lessons. The topics for computing are often richly linked to engaging contexts in other subjects and topics. The knowledge and skills for learning are mapped across each topic and year group to ensure systematic progression.
We have classed based laptops and chrome books for each year group which allows children to have the opportunity to use a range of devices and programs for many purposes across the wider curriculum, as well as in discrete computing lessons.
The implementation of the curriculum also ensures a balanced coverage of computer science, information technology and digital literacy. The children will have experiences of all three strands in each year group, but the subject knowledge imparted becomes increasingly specific and in depth, with more complex skills being taught, thus ensuring that learning is built upon. For example, children in Key Stage 1 learn what algorithms are, which leads them to the design stage of programming in Key Stage 2, where they design, write and debug programs, explaining the thinking behind their algorithms.
At St Georges, we want all students to be able to thrive as responsible, digital citizens. Technology is everywhere and will play a pivotal part in our students' lives. Therefore, we want to model and educate our pupils on how to use technology positively and safely. E-safety is embedded throughout the computing curriculum and supports and consolidates the strong presence of E-safety within our PSHE curriculum.

The impact of our computing teaching on our children is to:

- achieve high quality outcomes
- make outstanding progress in relation to their individual starting points
- Create and evaluate their own project work
- Be able to identify the source of problems and work with perseverance to 'debug' them
- Have a secure understanding of the positive applications and specific risks associated with a broad range of digital technology
- Present as competent and adaptable 'Computational Thinkers' who are able to use identified concepts and approaches in all of their learning

# Computing Whole School Topic Overview

| | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
|---|---|---|---|---|---|---|
| **Year 1** | **Skill:** Using programmable toys<br><br>**Topic:** We are treasure hunters | **Skill:** Filming<br><br>**Topic:** We are chefs | **Skill:** Illustrating an e-book<br><br>**Topic:** We are painters | **Skill:** Finding images using the web<br><br>**Topic:** We are collectors | **Skill:** Producing a talking book<br><br>**Topic:** We are storytellers | **Skill:** Creating a digital card<br><br>**Topic:** We are celebrating |
| **Year 2** | **Skill:** Programming on screen<br><br>**Topic:** We are astronauts | **Skill:** Exploring how computer games work<br><br>**Topic:** We are games testers | **Skill:** Taking photos<br><br>**Topic:** We are photographers | **Skill:** Researching using the internet<br><br>**Topic:** We are researchers | **Skill:** Collecting online clues<br><br>**Topic:** We are detectives | **Skill:** Collecting data<br><br>**Topic:** We are zoologists |
| **Year 3** | **Skill:** Programming an animation<br><br>**Topic:** We are programmers | **Skill:** Finding and correcting bugs in programs<br><br>**Topic:** We are bug fixers | **Skill:** Videoing<br><br>**Topic:** We are presenters | **Skill:** Making and sharing a screen cast presentation<br><br>**Topic:** We are vloggers | **Skill:** Communicating safely on the internet<br><br>**Topic:** We are communicators | **Skill:** Collecting and analysing data<br><br>**Topic:** We are opinion pollsters |
| **Year 4** | **Skill:** Developing a simple educational game<br><br>**Topic:** We are software developers | **Skill:** Prototyping an interactive toy<br><br>**Topic:** We are toy designers | **Skill:** Producing digital music<br><br>**Topic:** We are musicians | **Skill:** Edit and writing a HTML code<br><br>**Topic:** We are HTML editors | **Skill:** Producing a wiki<br><br>**Topic:** We are co authors | **Skill:** Presenting the weather<br><br>**Topic:** We are meteorologists |
| **Year 5** | **Skill:** Developing an interactive game<br><br>**Topic:** We are game developers | **Skill:** Cracking codes<br><br>**Topic:** We are cryptographers | **Skill:** Fusing geometry and art<br><br>**Topic:** We are artists | **Skill:** Creating a website<br><br>**Topic:** We are web developers | **Skill:** Blogging<br><br>**Topic:** We are bloggers | **Skill:** Creating a virtual space<br><br>**Topic:** We are architects |
| **Year 6** | **Skill:** Planning the creation of a mobile app<br><br>**Topic:** We are app planners | **Skill:** Developing project management skills<br><br>**Topic:** We are project managers | **Skill:** Researching the app market<br><br>**Topic:** We are market researchers | **Skill:** Designing an app interface<br><br>**Topic:** We are interface designers | **Skill:** Developing a mobile app<br><br>**Topic:** We are app developers | **Skill:** Creating a video and web copy for a mobile app<br><br>**Topic:** We are marketers |

# EYFS

| | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
|---|---|---|---|---|---|---|
| **Theme** | **Food** | **Animals** | **Building** | **Machines** | **Gardens** | **Water** |
| Cross Curricular Areas | Stories<br>Instructions<br>Health and exercise<br>Representing Information | Poetry and pattern<br>Traditional stories<br>Telling tales<br>Exploring longer music | Familiar stories<br>Talking about events<br>Special buildings and places | Stories<br>Talking about things (recount)<br>Vehicles and robots<br>Shape<br>Special times | Stories<br>Special me and us<br>Information texts<br>Growing plants<br>Plans and maps<br>Phoneme/grapheme correspondence (recognising letters) | Fantasty world stories<br>Extended stories<br>Water music – instruments to make water music<br>Noah's Ark |
| Activities | **4** We have feelings | **22** We are creative | **12** We are talkers | **5** We can drive | **20** We can observe | **23** We can record soundtracks |
| | **3** We are successful | **2** We can take turns | **13** We are digital readers | **18** We are shape makers | **11** We can understand messages | **21** We are game players |
| | **10** We can understand instructions | **1** We have confidence | **9** We can listen | **16** We can count | **17** We are designers | **14** We can email |
| | **7** We can exercise | **6** We are DJs | **19** We are community members | **15** We can blog | **8** We are healthy | **24** We are film producers |

# Year 1

| Unit | Expectations | Computing PoS | Software/Apps | Hardware |
|---|---|---|---|---|
| **1.1**<br>**We are treasure hunters**<br>Using programmable toys | • Understand that a programmable toy can be controlled by inputting a sequence of instructions.<br>• Develop and record sequences of instructions as an algorithm.<br>• Program the toy to follow their algorithm.<br>• Debug their programs.<br>• Predict how their programs will work. | • Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.<br>• Create and debug simple programs.<br>• Use logical reasoning to predict the behaviour of simple programs.<br>• Recognise common uses of information technology beyond school. | **Software:** Programming interface for programmable toy Scratch Bee-Bot simulator<br>**Apps:** Bee-Bot app; Daisy the Dinosaur; Blue-Bot app, | Programmable toy, such as a Bee-Bot or Roamer Too. Audio recorders are needed for the first step (your phone may be sufficient) |
| **1.2**<br>**We are TV chefs**<br>Filming the steps of a recipe | • Break down a process into simple, clear steps, as in an algorithm.<br>• Use different features of a video camera.<br>• Use a video camera to capture moving images.<br>• Develop collaboration skills.<br>• Discuss their work and think about how it could be improved. | • Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.<br>• Use technology purposefully to create, organise, store, manipulate and retrieve digital content.<br>• Recognise common uses of information technology beyond school.<br>• Use logical reasoning to predict the behaviour of simple programs. | **Software:** Microsoft Paint, Microsoft Windows Live Movie Maker®/iMovie for OS X<br>**Apps:** Brushes Redux, iMovie | Computers, cameras with movie mode/tablets |
| **1.3**<br>**We are painters**<br>Illustrating an eBook | • Use the web safely to find ideas for an illustration.<br>• Select and use appropriate painting tools to create and change images on the computer.<br>• Understand how this use of ICT differs from using paint and paper.<br>• Create an illustration for a particular purpose.<br>• Know how to save, retrieve and change their work.<br>• Reflect on their work and act on feedback received. | • Use technology purposefully to create, organise, store, manipulate and retrieve digital content.<br>• Recognise common uses of information technology beyond school.<br>• 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. | **Software:** Tux Paint/ Microsoft Paint/2Simple 2Paint A Picture/Fresh Paint, IWB software, Microsoft Word®, Microsoft PowerPoint®<br>**Apps:** Brushes Redux, SketchBook Express, Fresh Paint | Laptop/desktop computers or tablets |

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| **1.4**<br>**We are collectors**<br>Finding images using the web | • Find and use pictures on the web.<br>• Know what to do if they encounter pictures that cause concern.<br>• Group images on the basis of a binary (yes/no) question.<br>• Organise images into more than two groups according to clear rules.<br>• Sort (order) images according to some criteria.<br>• Ask and answer binary (yes/no) questions about their images. | • Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.<br>• Use technology purposefully to create, organise, store, manipulate and retrieve digital content.<br>• 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.<br>• Recognise common uses of information technology beyond school. | **Software:** Web browser, Microsoft PowerPoint® or IWB Software<br>**Apps:** Web browser, Keynote or Explain Everything | Internet connection, laptop/ desktop computers |
| **1.5**<br>**We are storytellers**<br>Producing a talking book | • Use sound recording equipment to record sounds.<br>• Develop skills in saving and storing sounds on the computer.<br>• Develop collaboration skills as they work together in a group.<br>• Understand how a talking book differs from a paper-based book.<br>• Talk about and reflect on their use of ICT.<br>• Share recordings with an audience. | • Use technology purposefully to create, organise, store, manipulate and retrieve digital content.<br>• Recognise common uses of information technology beyond school.<br>• Use technology safely and respectfully ... | **Software:** Microsoft PowerPoint®/2Create A Story/IWB software<br>**Apps:** Keynote/Explain Everything/Book Creator | Computers/tablets, MP3 recorders/microphones |
| **1.6**<br>**We are celebrating**<br>Creating a card digitally | • Develop basic keyboard skills, through typing and formatting text.<br>• Develop basic mouse skills.<br>• Use the web to find and select images.<br>• Develop skills in storing and retrieving files.<br>• Develop skills in combining text and images.<br>• Discuss their work and think about whether it could be improved. | • Use technology purposefully to create, organise, store, manipulate and retrieve digital content.<br>• Recognise common uses of information technology beyond school.<br>• 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. | **Software:** Microsoft PowerPoint®/Microsoft Word®/Clicker 7<br>**Apps:** Pages/Keynote, Brushes Redux/Sketchbook Express | Laptops/computers/tablets, printer |

# Year 2

| Unit | Expectations | Computing PoS | Software/Apps | Hardware |
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| **2.1**<br>**We are astronauts**<br>Programming on screen | • Have a clear understanding of algorithms as sequences of instructions.<br>• Convert simple algorithms to programs.<br>• Predict what a simple program will do.<br>• Spot and fix (debug) errors in their programs. | • Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.<br>• Create and debug simple programs.<br>• Use logical reasoning to predict the behaviour of simple programs. | **Software:** Scratch, Kodu, Snap!<br>**Apps:** Hopscotch, Daisy the Dinosaur, Pyonkee | Programmable toy, such as a Bee-Bot or Roamer Too |
| **2.2**<br>**We are games testers**<br>Exploring how computer games work | • Describe carefully what happens in computer games.<br>• Use logical reasoning to make predictions of what a program will do.<br>• Test these predictions.<br>• Think critically about computer games and their use.<br>• Be aware of how to use games safely and in balance with other activities. | • Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.<br>• Use logical reasoning to predict the behaviour of simple programs.<br>• Recognise common uses of information technology beyond school.<br>• Use technology safely and respectfully, keeping personal information private. | **Software:** Scratch, Screencast-o-matic, web-based or open source games, pupils' games, Snap<br>**Apps:** Pyonkee free game apps, Light-bot | Desktop/laptop computers, IWB, internet connection; optionally, MP3 recorders, pupils' own game consoles |
| **2.3**<br>**We are photographers**<br>Taking better photos | • Consider the technical and artistic merits of photographs.<br>• Use a digital camera or camera app.<br>• Take digital photographs.<br>• Review and reject or rate the images they take.<br>• Edit and enhance their photographs.<br>• Select their best images to include in a shared portfolio. | • Use technology purposefully to create, organise, store, manipulate and retrieve digital content.<br>• Recognise common uses of information technology beyond school.<br>• 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. | **Software:** Picasa, Pixlr<br>**Apps:** Photos (iOS), Snapseed | Desktop or laptop computers and digital cameras/tablets/ smartphones |

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| **2.4**<br>**We are researchers**<br>Researching a topic | • Develop collaboration skills through working as part of a group.<br>• Develop research skills through searching for information on the internet.<br>• Improve note-taking skills through the use of mind mapping.<br>• Develop presentation skills through creating and delivering a short multimedia presentation. | • Use technology purposefully to create, organise, store, manipulate and retrieve digital content.<br>• Recognise common uses of information technology beyond school.<br>• 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. | **Software:** FreeMind, bubbl.us, Google Custom Search, web browser, Microsoft PowerPoint®<br>**Apps:** iThoughtsHD, Safari, Keynote, Popplet Lite, bubbl.us | Laptop or desktop computers or tablets, internet connection |
| **2.5**<br>**We are detectives**<br>Collecting clues | • Understand that email can be used to communicate.<br>• Develop skills in opening, composing and sending emails.<br>• Gain skills in opening and listening to audio files on the computer.<br>• Use appropriate language in emails.<br>• Develop skills in editing and formatting text in emails.<br>• Be aware of online safety issues when using email. | • Use technology purposefully to create, organise, store, manipulate and retrieve digital content.<br>• Recognise common uses of information technology beyond school.<br>• 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. | **Software:** Your school's email system, Microsoft Excel® Google Sheets<br>**Apps:** Mail, Numbers, Google Sheets | Desktop or laptop computers or tablets; network access |
| **2.6**<br>**We are zoologists**<br>Collecting data about bugs | • Sort and classify a group of items by answering questions.<br>• Collect data using tick charts or tally charts.<br>• Use simple charting software to produce pictograms and other basic charts.<br>• Take, edit and enhance photographs.<br>• Record information on a digital map. | • Use technology purposefully to create, organise, store, manipulate and retrieve digital content.<br>• Recognise common uses of information technology beyond school.<br>• 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. | **Software:** Microsoft Excel®/Google Sheets/IWB software, Picasa/Photo Gallery, Google My Maps/ Google Earth<br>**Apps:** Numbers/Google Sheets, Snapseed, RunKeeper | Desktop or laptop computers with digital cameras/tablets, internet connection |

# Year 3

| Unit | Expectations | Computing PoS | Software/Apps | Hardware |
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| **3.1**<br>**We are programmers**<br>Programming an animation | • Create an algorithm for an animated scene in the form of a storyboard.<br>• Write a program in Scratch to create the animation.<br>• Correct mistakes in their animation programs. | • Design, write and debug programs that accomplish specific goals; solve problems by decomposing them into smaller parts.<br>• Use sequence ... in programs; work with variables and various forms of input and output.<br>• Use logical reasoning to detect and correct errors in algorithms and programs.<br>• Select, use and combine a variety of software ... to design and create ... content that accomplish(es) given goals, including ... presenting ... information. | **Software:** Scratch (recommended), Snap!, Microsoft PowerPoint®, Tux Paint, Scratch Jnr<br>**Apps:** Pyonkee | Laptop or desktop computers (recommended) or tablets, cameras (optional), microphones (optional) |
| **3.2**<br>**We are bug fixers**<br>Finding and correcting bugs in programs | • Develop a number of strategies for finding errors in programs.<br>• Build up resilience and strategies for problem solving.<br>• Increase their knowledge and understanding of Scratch.<br>• Recognise a number of common types of bug in software. | • Debug programs that accomplish specific goals.<br>• Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.<br>• Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. | **Software:** Scratch, Snap!, Screencast-o-matic (if appropriate)<br>**Apps:** Snap! in the web browser (Scratch requires Adobe Flash® Player, which is not available on iPad), Pyonkee | Laptop/desktop computers, microphone (if appropriate) |
| **3.3**<br>**We are presenters**<br>Videoing performance | • Gain skills in shooting live video, such as framing shots, holding the camera steady, and reviewing.<br>• Edit video, including adding narration and editing clips by setting in/out points.<br>• Understand the qualities of effective video, such as the importance of narrative, consistency, perspective and scene length. | • 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.<br>• Work with various forms of input and output.<br>• Use technology safely, respectfully and responsibly. | **Software:** Microsoft Windows Movie Maker® or iMovie, Kinovea/Dartfish<br>**Apps:** iMovie/Coach's Eye | Digital cameras, flip cameras (or similar), tablet computers/iPod Touch or similar |

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| **3.4**<br>**We are vloggers**<br>Making and sharing a short screencast presentation | • Use a search engine to learn about a new topic.<br>• Plan, design and deliver an interesting and engaging presentation.<br>• Search for and evaluate online images.<br>• Create their own original images.<br>• Create a video slidecast of a narrated presentation.<br>• Develop understanding of how the internet, the web and search engines work. | • Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web.<br>• Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.<br>• 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.<br>• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. | **Software:** Google, creative commons search engines, PowerPoint / Google Presentation, screencast-o-matic / QuickTime Player<br>**Apps:** Safari, Explain Everything, Adobe Voice | Laptops/desktop PCs with microphones/tablet computers |
| **3.5**<br>**We are communicators**<br>Communicating safely on the internet | • Develop a basic understanding of how email works.<br>• Gain skills in using email.<br>• Be aware of broader issues surrounding email, including 'netiquette' and online safety.<br>• Work collaboratively with a remote partner.<br>• Experience video conferencing. | • 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.<br>• 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.<br>• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. | **Software:** Email system (your school's own system, Gmail or another system), video conferencing software (Skype, Google Hangouts or Janet video conferencing), presentation software<br>**Apps:** Skype, FaceTime, Hangouts | Webcam and speakers |
| **3.6**<br>**We are opinion pollsters**<br>Collecting and analysing data | • Understand some elements of survey design.<br>• Understand some ethical and legal aspects of online data collection.<br>• Use the web to facilitate data collection.<br>• Gain skills in using charts to analyse data.<br>• Gain skills in interpreting results. | • 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.<br>• 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. | **Software:** Web browser, Google Forms, Google Sheets and Google Slides/ InspireData®/Microsoft Excel® and Microsoft Word®/Freemind<br>**Apps:** Google Drive/web browser | Laptop or desktop computer with internet connection |

# Year 4

| Unit | Expectations | Computing PoS | Software/Apps | Hardware |
|---|---|---|---|---|
| **4.1**<br>**We are software developers**<br>Developing a simple educational game | • Develop an educational computer game using selection and repetition.<br>• Understand and use variables.<br>• Start to debug computer programs.<br>• Recognise the importance of user interface design, including consideration of input and output. | • Design, write and debug programs that accomplish specific goals.<br>• Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.<br>• Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. | **Software:** Scratch/Snap!<br>**Apps:** Pyonkee | Laptop/desktop computer, microphones (not essential) |
| **4.2**<br>**We are toy designers**<br>Prototyping an interactive toy | • Design and make an on-screen prototype of a computer-controlled toy.<br>• Understand different forms of input and output (such as sensors, switches, motors, lights and speakers).<br>• Design, write and debug the control and monitoring program for their toy. | • Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems.<br>• Use sequence, selection, and repetition in programs; work with various forms of input and output.<br>• Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. | **Software:** Scratch/Snap!<br>**Apps:** Pyonkee | Laptops/computers, microphones and speakers, BBC micro:bit and Raspberry Pi |
| **4.3**<br>**We are musicians**<br>Producing digital music | • Use one or more programs to edit music.<br>• Create and develop a musical composition, refining their ideas through reflection and discussion.<br>• Develop collaboration skills.<br>• Develop an awareness of how their composition can enhance work in other media. | • Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.<br>• Understand computer networks including the internet; ... and the opportunities they offer for communication and collaboration.<br>• Be discerning in evaluating digital content.<br>• 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.<br>• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour. | **Software:** Isle of Tune, Audacity®, LMMS/ GarageBand, MuseScore (optional), SoundBox<br>**Apps:** Isle of Tune, GarageBand | Computers or tablets, microphones, midi instruments, if available |

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| **4.4**<br>**We are HTML editors**<br>Editing and writing HTML | • Understand some technical aspects of how the internet makes the web possible.<br>• Use HTML tags for elementary mark up.<br>• Use hyperlinks to connect ideas and sources.<br>• Code up a simple web page with useful content.<br>• Understand some of the risks in using the web. | • 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.<br>• Use technology safely, respectfully and responsibly; know a range of ways to report concerns and unacceptable behaviour.<br>• Use and combine a variety of software (including internet services) to accomplish given goals, including presenting information. | **Software:** Firefox, Brackets, Chrome developer tools<br>**Apps:** Safari, Koder | Laptop/desktop computers |
| **4.5**<br>**We are co-authors**<br>Producing a wiki | • Understand the conventions for collaborative online work, particularly in wikis.<br>• Be aware of their responsibilities when editing other people's work.<br>• Become familiar with Wikipedia, including potential problems associated with its use.<br>• Practise research skills.<br>• Write for a target audience using a wiki tool.<br>• Develop collaboration skills.<br>• Develop proofreading skills. | • Solve problems by decomposing them into smaller parts.<br>• 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.<br>• Use search technologies effectively.<br>• Use ... a variety of software (including internet services) ... to ... create ... content ... including ... presenting information.<br>• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. | **Software:** Learning platform wiki tools/ MediaWiki/Google Sites/ other hosted wiki<br>**Apps:** Web browser (e.g. Safari), Wikipedia app | Computers and internet connection, web server (if hosting MediaWiki) |
| **4.6**<br>**We are meteorologists**<br>Presenting the weather | • Understand different measurement techniques for weather, both analogue and digital.<br>• Use computer-based data logging to automate the recording of some weather data.<br>• Use spreadsheets to create charts<br>• Analyse data, explore inconsistencies in data and make predictions<br>• Practise using presentation software and, optionally, video. | • Work with variables and various forms of input and output.<br>• Use logical reasoning to explain how some simple algorithms work.<br>• Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.<br>• 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. | **Software:** Microsoft Excel®/Google Sheets, web browser, Microsoft PowerPoint®/IWB software<br>**Apps:** Weather Station by Netatmo, Weather Station.UK, Numbers, Keynote/Explain Everything | Equipment for measuring weather |

# Year 5

| Unit | Expectations | Computing PoS | Software/Apps | Hardware |
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| **5.1**<br>**We are game developers**<br>Developing an interactive game | • Create original artwork and sound for a game.<br>• Design and create a computer program for a computer game, which uses sequence, selection, repetition and variables.<br>• Detect and correct errors in their computer game.<br>• Use iterative development techniques (making and testing a series of small changes) to improve their game. | • Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.<br>• Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.<br>• Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.<br>• 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… | **Software:** Scratch/ Snap! (or Kodu)<br>**Apps:** Pyonkee | Desktop/laptop computers, microphones |
| **5.2**<br>**We are cryptographers**<br>Cracking codes | • Be familiar with semaphore and Morse code.<br>• Understand the need for private information to be encrypted.<br>• Encrypt and decrypt messages in simple ciphers.<br>• Appreciate the need to use complex passwords and to keep them secure.<br>• Have some understanding of how encryption works on the web. | • Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.<br>• 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.<br>• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. | **Software:** Scratch 2.0/Snap!, The Black Chamber (website)<br>**Apps:** The Black Chamber in the web browser, Pyonkee | Laptop/desktop computers |
| **5.3**<br>**We are artists**<br>Fusing geometry and art | • Develop an appreciation of the links between geometry and art.<br>• Become familiar with the tools and techniques of a vector graphics package.<br>• Develop an understanding of turtle graphics.<br>• Experiment with the tools available, refining and developing their work as they apply their own criteria to evaluate it and receive feedback from their peers.<br>• Develop some awareness of computer-generated art, in particular fractal-based landscapes. | • Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.<br>• Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.<br>• 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. | **Software:** Inkscape/ Adobe Illustrator/ CorelDRAW, Scratch/ Snap!, Terragen, Logo<br>**Apps:** Adobe Ideas/neu. draw, Pyonkee, i-Logo | Laptop or desktop computers/tablets |

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| **5.4**<br>**We are web developers**<br>Creating a website about cyber safety | • Develop their research skills to decide what information is appropriate.<br>• Understand some elements of how search engines select and rank results.<br>• Question the plausibility and quality of information.<br>• Develop and refine their ideas and text collaboratively.<br>• Develop their understanding of online safety and responsible use of technology. | • 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.<br>• Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.<br>• 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.<br>• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. | **Software:** Google, Bing, Google Sites/wiki tool in the school's learning platform/WordPress/ Adobe Slate<br>**Apps:** Google Search app, Google Sites via browser/WordPress/ Adobe Slate | Desktop or laptop computers/tablets |
| **5.5**<br>**We are bloggers**<br>Sharing experiences and opinions | • Become familiar with blogs as a medium and a genre of writing.<br>• Create a sequence of blog posts on a theme.<br>• Incorporate additional media.<br>• Comment on the posts of others.<br>• Develop a critical, reflective view of a range of media, including text. | • 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.<br>• 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.<br>• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.<br>• … be discerning in evaluating digital content. | **Software:** WordPress/ Blogger/learning platform blogging tool or similar, GIMP, Audacity®, Microsoft Windows Movie Maker®<br>**Apps:** WordPress, Camera, Snapseed | Computers, digital cameras, audio recorders/tablets |
| **5.6**<br>**We are architects**<br>Creating a virtual space | • Understand the work of architects, designers and engineers working in 3D.<br>• Develop familiarity with a simple CAD (computer aided design) tool.<br>• Develop spatial awareness by exploring and experimenting with a 3D virtual environment.<br>• Develop greater aesthetic awareness. | • Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.<br>• 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. | **Software:** Trimble SketchUp (used for 3D modelling), Screencast-o-matic (for final screencast), Minecraft<br>**Apps:** Home Design 3D/3dVAS, Sketchup Viewer | Laptops/ computers |

# Year 6

| Unit | Expectations | Computing PoS | Software/Apps | Hardware |
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| **6.1**<br>**We are app planners**<br>Planning the creation of a mobile app | • Develop an awareness of the capabilities of smartphones and tablets.<br>• Understand geolocation, including GPS.<br>• Identify interesting, solvable problems.<br>• Evaluate competing products.<br>• Pitch a proposal for a smartphone or tablet app. | • 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.<br>• Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.<br>• 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.<br>• Work with ... various forms of input and output. | **Software:** App Inventor/ TouchDevelop, Picasa Web, Google Drive Presentation/ Prezi or similar<br>**Apps:** Codea, TouchDevelop | Computers and tablets or smartphones (can be done with a phone emulator) |
| **6.2**<br>**We are project managers**<br>Developing project management skills | • Scope a project to identify different components that must be successfully combined.<br>• Identify their existing talents and plan how they can develop further knowledge and skills.<br>• Identify the component tasks of a project and develop a timeline to track progress.<br>• Identify the resources they'll need to accomplish a project.<br>• Use web-based research skills to source tools, content and other resources.<br>• Consider strategies to ensure the quality of a collaborative project. | • Solve problems by decomposing them into smaller parts.<br>• 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.<br>• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.<br>• Be discerning in evaluating digital content.<br>• Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. | **Software:** Google Apps for Education/ VLE/GitHub/Basecamp<br>**Apps:** Web browser (Safari) | Laptop or desktop computers, internet access |
| **6.3**<br>**We are market researchers**<br>Researching the app market | • Create a set of good survey questions.<br>• Analyse the data obtained from a survey.<br>• Work collaboratively to plan questions.<br>• Conduct an interview or focus group.<br>• Analyse and interpret the information obtained from interviews or a focus group.<br>• Present their research findings. | • 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.<br>• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. | **Software:** Google Drive applications/ Microsoft Office, Microsoft Windows Movie Maker®<br>**Apps:** Web browser, Keynote, iMovie | Laptop/desktop computers, internet access |

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| **6.4**<br>**We are interface designers**<br>Designing an interface for an app | • Work collaboratively to design the app's interface.<br>• Use wireframing tools to create a design prototype of their app.<br>• Develop or source the individual interface components (media assets) they will use.<br>• Address accessibility and inclusion issues.<br>• Document their design decisions and the process they've followed. | • Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.<br>• Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.<br>• Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.<br>• 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.<br>• Be discerning in evaluating digital content.<br>• Recognise acceptable/unacceptable behaviour. | **Software:** Justinmind Prototyper/Pencil Project/Microsoft PowerPoint®<br>**Apps:** SketchyPad or iMockups (pay-for apps) | Laptop/desktop/ tablets |
| **6.5**<br>**We are app developers**<br>Developing a simple mobile phone app | • Become familiar with another programming toolkit or development platform.<br>• Import existing media assets to their project.<br>• Write down the algorithms for their app.<br>• Program, debug and refine the code for their app.<br>• Thoroughly test and evaluate their app. | • Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.<br>• Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.<br>• Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.<br>• 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. | **Software:** App Inventor/ TouchDevelop<br>**Apps:** TouchDevelop/ Codea | Computers and tablets/ smartphones/ phone emulator |
| **6.6**<br>**We are marketeers**<br>Creating video and web copy for a mobile phone app | • Consider key marketing messages, including identifying a unique selling point.<br>• Develop a printed flyer or brochure incorporating text and images.<br>• Further develop knowledge, skills and understanding in relation to creating a website.<br>• Further develop skills relating to shooting and editing video. | • 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.<br>• Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.<br>• Select, use and combine a variety of software (including internet services) … to design and create … content that accomplishes given goals, including collecting, analysing, evaluating and presenting ... information.<br>• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. | **Software:** Microsoft Publisher™, WordPress/Google Sites, Movie Maker® and other programs chosen by the pupils<br>**Apps:** Pages, WordPress, iMovie and other apps chosen by the pupils | Laptops/ desktop computers, cameras |