



The Federation of St. Giles and St John
Computing progression map



The computing curriculum can be divided into three inter-related strands:

- Computer science-the programming aspects
- Information Technology-creation and use of digital materials (these skills may be used across the curriculum)
- Digital literacy-keeping safe online, communicating and using technology in a digital world (these skills are developed across the curriculum)

| Statement number | National curriculum statement-KS1 |
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| 1.1 | Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following unambiguous instructions |
| 1.2 | Create and debug simple programs |
| 1.3 | Use logical reasoning to predict the behaviour of simple programs |
| 1.4 | Use technology purposefully to create, organise, store, manipulate and retrieve digital content |
| 1.5 | Recognise common uses of information technology beyond school |
| 1.6 | 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 |

| Statement number | National curriculum statement-KS2 |
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| 2.1 | Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts |
| 2.2 | Use sequence, selection, and repetition in programs; work with variables and various forms of input and output |
| 2.3 | Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs |
| 2.4 | 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 |
| 2.5 | Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content |

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| 2.6 | 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 | | | | | |
| 2.7 | Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact | | | | | |
| By the end of EYFS | By the end of Y1 | By the end of Y2 | By the end of Y3 | By the end of Y4 | By the end of Y5 | By the end of Y6 |
| | 1.1-understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise/ unambiguous instructions | | 2.1- Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. | | | |
| Children recognise that a range of technology is used at school and at home and in other places too for particular purposes. | Children understand that an algorithm is a set of instructions. | To design an algorithm and make predictions upon their outcomes. Children can debug a program and explain that a sequence of commands has a start and an outcome. | Children can turn a simple real-life situation into an algorithm for a program by deconstructing it into manageable parts. Children recognise that a sequence of commands has an order and an outcome. They are able to identify and fix bugs in a program. | Children create a program in a text-based language. They use “repeat” and controlled loops within a program. | Children may attempt to turn more complex real-life situations into algorithms for a program by deconstructing it into manageable parts. Children are able to test and debug their programs. They develop understanding of conditional statements. | Children use algorithms within a real life situation. They are able to define a “variable” and use conditional statements within algorithms to control an output. |
| | 1.2 Create and debug simple programs | | 2.2 Use sequence, selection and repetition in programs; work with variables and various forms of input and output | | | |
| | To create more than one solution to a problem. Identify the effect of changing a value. | Children can create a simple program that achieves a specific purpose. Children are able to explain a sequence of commands, debug and improve a program. | Children demonstrate the ability to design and code a program that follows a simple sequence. They recognise that algorithms are a sequence of connected commands and are able to | Children are able to use and explain “repeat” within a text-based program. Loop can be used as part of the recognition and it is recognised that there are inputs and | Children can translate algorithms that include sequence, repetition loop. Children can identify and modify conditions within a selection, using “if”, “then”, “else” conditions. These conditional statements | Children translate algorithms that include sequence, selection and repetition into code. They are able to define and use a variable within a program. A program is developed to use |

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| | | | identify and fix bugs within a program. | outputs within a sensor scenario. | relate to an outcome. Conditions are used within physical computing. | inputs, outputs and a controllable device. |
| | 1.3. Use logical reasoning to explain how some simple algorithms work and to detect and correct behaviour of simple programs. | | 2.3. Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. | | | |
| | To explain a command and predict the outcome involving a sequence of up to four commands. Two programs can be devised for the same output. Children can say what will happen if a simple value is changed. | To predict the outcome of a sequence and explain choices made for a block design algorithm. | Using a block design program in a sequence of connected commands, I can test, identify and fix bugs within a program. | To decompose a program into parts and select which part will be repeated explaining the effect of changes. Algorithms are amended to debug outcomes. | To explain a condition is true or false and describe what the outcome of physical programming is in addition to testing and debugging. To relate a conditional statement to an outcome and explains that selection directs the flow of a program. | To explain why a variable is used in a program and know where to place a variable within a program. Children can transfer a program to a controllable device, modifying it to achieve different outcomes. |
| | 1.4 Use technology purposefully to create, organise, store, manipulate and retrieve digital content. | | 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. | | | |
| | Children are able to identify technology, a computer and its main parts. They are able to use hardware such as a mouse and keyboards. Children are able to add and remove text and choose the drawing tools for a purpose. Data is groups with | To recognise uses and features of information technology and devices. Children use tools to change media. Objects are selected through an attribute and comparisons are made. Technology is | Children can explain inputs and outputs of digital devices and recognise they change the way we work. An understanding of connected devices is developed and physical components of a network. | Children recognise the main component parts of hardware which allow computers to join and form a network. They understand the difference between the internet and the world wide web and how websites can be | Children understand the value of computer networks and recognise the value of computer systems in lives. Children understand the internet allows different media to be shared and collaboration takes place online. | Children recognise how we communicate using technology and evaluate different methods for particular purposes. |

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| | similar properties and simple questions about this data are answered. | used purposefully through music. | | shared over the WWW. | | |
| | 1.5. Recognise common uses of technology beyond school | | 2.5 Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. | | | |
| | Children can identify technology around us and the use of it. | To recognise the uses and features of information technology in the home, school and beyond. | Children understand the function, features and layout of a search engine. | Children understand the function, features and layout of a search engine. They can appraise selected webpages for credibility and information at a basic level. | Children group and sort with greater complexity. They can navigate a flat-file database and sort/group to answer questions. | Children search with greater complexity for digital content when using a search engine. They are able to explain in some detail how credible a webpage is and the information it contains. |
| | | | 2.6. Use, select 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. | | | |
| | | | Stop-frame animation. Sequence in music Branching database Desktop publishing | Audio editing Logo Photo editing Scratch Data logging | Video editing Physical control-crumbles Flat-file database Vector drawing Quizzes | Web page creation Micro-bits Spreadsheets 3d Modelling Sensing |
| | 1.6. 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. | | 2.7. 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. | | | |

Privacy and security

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| <p>To identify simple examples of personal information. To describe people who can be trusted with this information.</p> | <p>Recognise more detailed examples of personal information. Describe how passwords can protect the information. Explain why I should ask a trusted adult before sharing information.</p> | <p>Describe online information that can be seen by other. Explain the purpose of and use passwords. Explain household devices that connect to the internet. Describe some rules to keep a password safe.</p> | <p>Give reasons why information shouldn't be shared. Explain why passwords are important. Describe how connected devices share information. Describe strategies for keeping passwords private.</p> | <p>Explain what a strong password is. Know that others may pretend to be me online and explain why they may do this. Know the internet can be monitored. Describe strategies for keeping my personal information private.</p> | <p>Create and use strong passwords. Understand free apps use private information and understand some apps make additional payments.</p> | <p>Use and understand management of passwords explaining what to do if lost/stolen. Explain app permissions and how privacy can be increased. Know some ways people target online to gain money or information illegally.</p> |
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Health, well-being and lifestyle

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| <p>Identify rules to keep us safe in and beyond the home.</p> | <p>Identify rules to keep us safe in and beyond the home, giving examples of these.</p> | <p>Explain why spending too much time online can negatively impact me.</p> | <p>Explain why spending too much time online can negatively impact me giving examples.</p> | <p>I know technology can be a distraction and strategies to limit time using technology.</p> | <p>To understand how technology can affect sleep and strategies to help this.</p> | <p>To describe common systems to regulate age-related content. Assess and monitor impact of technology on my health, regulating this.</p> |
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| Online bullying | | | | | | |
| To describe ways people can be unkind online and how this makes others feel | To describe ways people can be unkind online and how this makes others feel, giving examples. | To describe ways people can be unkind online and how this makes others feel. Know how to talk to someone about help for online bullying. | Describe what and how online bullying takes place. Know rules about how to behave online. | Give examples of how online bullying takes place. Understand how it makes others feel and the impact on their reputation. | Give examples of how online bullying takes place. Know where to seek help, report the bullying and block abusive users. | To explain a range of ways to report online bullying both at home and at school. |
| Online relationships | | | | | | |
| I can recognise that the internet can be used to communicate. | I can recognise the internet can be used to communicate and why it's important to be kind online. | To give examples of how the internet can be used to communicate with people eg eMail. | To give examples of online communication and know the risks of these. Explain the differences for risk and trust between an online and real life relationship. | Describe how to stay safe in a range of online social environments, giving examples how to be respectful online. | Describe how to communicate positively online and understand that some may want to do harm online. | Understand well-being responsibilities to myself and others in my social group. Know how impulsive communications can cause harm online. Demonstrate how to support others and report problems online. |
| Self-image | | | | | | |
| To know that I can say, "No" in real life and online. | To know that I can say, "No" in real life and online giving | People's identity may be different online to in real life. Give examples | Explain what is meant by identity and ways that a person can be | Explain online identity is different to real life and describe how | Understand how identity can be copied, modified or altered and | Describe different feelings from the online world and how to support |

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| | examples of people to seek help from. | of issues online that cause negative feelings. Describe ways people may make themselves look online. | presented online eg using an avatar. | online decisions can change the way people perceive me. | demonstrate responsible choices. | these. Identify how the media shapes ideas about gender and know how to seek help. |
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Online reputation

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| To identify ways information is put online. | Understand information can be copied and know when to ask an adult. | Know information can last online for a long time and know when to ask an adult. | Know to take care about the information I share online, seeking support when unsure. | Describe how others can find information online and explain how information can be created, copied or shared. | Find and describe information about people online, understanding that judgements can be made. | Explain and develop ways to build a positive reputation online. |
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Managing information online

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| Explain how the internet can help find information out. | Use a simple search, seeking help if unsure. | Use search engines and navigate a simple webpage. Explain voice activation eg Siri, Alexa, Google Now. Understand some information may not be true. | Use key phrases in search engines, explaining auto complete. Explain how the internet can be used to buy and sell things. | To distinguish between a fact, opinion and belief. Describe methods used to encourage people to buy things online. Know that someone online might be a computer programme. | Search and evaluate information online, explaining what is meant by a hoax. Know and explain the difference between information and dis-information. | Use search engines and understand how they rank sites. Analyse the validity of information, understanding the manipulation, persuasion and influence online. Identify, flag and report inappropriate content. |
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| Ownership | | | | | | |
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| Name and know my work belongs to me. | Know how to save work that belongs to me. | Recognise content that belongs to others online. | Explain that copying others' work online without permission can cause problems. | Consider whether I have the right to use online content. | Assess and justify when it is acceptable to use work of others giving examples of when it is permitted to be reused. | Search online for content that can be used online. Demonstrate how to reference and acknowledge sources used online. |

Examples of questions

Reception:

How do you think a farmer might use technology to look after animals?

How do you think the nurses and other staff might use technology at a hospital?

What is personal information?

When can I say, "No"?

How do people communicate on the internet?

Year 1:

What is coding?

What is an instruction?

What is debugging?

IN what ways can we sort?

What is a spreadsheet?

What is a password?

Year 2:

What is an algorithm and why is it useful in coding?

How can a database help organise information?

How can I search the internet?

What is an eMail?

Why is spending too much time online bad for me?

Year 3:

How can variables be used in coding?

How can data be presented in suitable graphs?

How can databases and branching databases help organise information?

What is online identity?

What information is safe to send by email?

Year 4:

What are the stages of design, code, test and debug?

How can variables and if/else statements be useful?

How can continuous data be presented in a spreadsheet?

What is the difference between a fact, opinion and a belief?

What is a search engine?

How can I keep personal information private?

Year 5:

How can I sort data in databases to make it effective for understanding?

How can product be calculated using a spreadsheet?

How can spreadsheets support budgeting?

How do I seek help, report online bullying and block abusive users?

Year 6:

How can input be used in coding?

How can advanced calculation in spreadsheets support real life use?

Why do I build a positive online reputation?

How can I self-regulate my well-being?

What is the difference between the internet and the WWW?

What is a blog?

Vocabulary

The vocabulary builds year on year, so vocabulary from previous years should be use and built upon every year.

| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
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| Instruction Algorithm Computer Program Debug Direction Arrow Backwards Forwards Right turn Left turn Action Design mode input | Command Code block Code design Design mode Repeat timer | Action Event If Input Output Computer Simulation variable | Control If/else LOGO BK FD RT LT REPEAT SETPC SETPS PU PD | Code design Design mode Sequence Timer variable | As previous years in more complex coding situations. |
| Sort Criteria Pictogram Data Collate Cell Rows Spreadsheet Column Count tool | Copy Paste Columns Rows Equals tool database | Advance mode Spreadsheet <>= Communication Email Compose Send CC Attachment Branching database data | Formula wizard Formula charts | Average Advance mode Binary tree Sort group Arrange statistics | Blog Blog page collaborative |

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| Personal information Trust Online Communicate Username Password Avatar Log out Tools Save Password Online safety e-safety search | Log in/log out Webpage Identity Email Self-image bullying | Voice Real life Relationship Online Key phrases Search engine Auto complete Permission ownership | Private Imposter Strong password Online reputation Perception Fact Opinion belief | Technology Well-being Hoax Mis-information Dis-information | Illegal Manipulation Persuasion Influence Validity Media Gender Social groups Impulsive Self regulating |
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