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| |  |  | | --- | --- | | **Computing**  **Curriculum Plan** | C:\Users\School\Documents\Southridge First School documents\Southridge First School documents\logo\southridge logo\southridge logo 002.jpg | |
| **COMPUTING**  Purpose of study  A high-quality computing education equips pupils to understand and change the world through logical thinking and creativity, including by making links with mathematics, science, and design and technology. The core of computing is computer science, in which pupils are taught the principles of information and computation, and how digital systems work. Computing equips pupils to use information technology to create programs, systems and a range of media. It also ensures that pupils become digitally literate – able to use, and express them-selves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world. |
| **Aims**  The national curriculum for computing aims to ensure that all pupils:  . can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation  . can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems  . can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems  . are responsible, competent, confident and creative users of information and communication technology. |
| **Subject content for Key Stage 1**  ***Pupils should be taught:***  . 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  . use technology safely and respectfully, keeping personal information private; know where to go for help and support when they have concerns about material on the internet  . recognise common uses of information technology beyond school. |
| **Subject content for Key Stage 2**  ***Pupils should be taught:***  . 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  . use technology safely, respectfully and responsibly; know a range of ways to report concerns and inappropriate behaviour  . select, use and combine a variety of software (including internet services) on a range of digital devices to accomplish given goals, including collecting, analysing, evaluating and presenting data and information. |
| **Attainment targets:**  By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study. |

Key Focus: CS-Computer Science IT-Information Technology DL-Digital Literacy

**Computing Long Term Plan**

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| **Year 1** | | **Main focus of unit** |
| **Autumn 1**  Jurassic Forest | **Topic: Exploring machines we control.**  ***Computer science- control and programming.***   * understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions * use logical reasoning to predict the behaviour of simple programs * recognise common uses of information technology beyond school   Children to use Beebots and Ozobots throughout this unit.  E-safety: Owning your creative work.  Hector’s world: details, details. | **C.S.** |
| **I.T.** |
| **D.L.** |
| **Autumn 2**  Welcome to Pirate Island | **Topic: Programming direction.**  ***Computer science control and programming.***   * 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   Focus on mazes and giving clear and unambiguous instructions.  Debugging instructions to correct errors.  E-safety: safe image searching.  Hector’s world: welcome to the carnival. | **C.S.** |
| **I.T.** |
| **D.L.** |
| **Spring 1**  Amazing Animals | **Topic: Introduction to digital art.**  ***IT and digital literacy- digital imagery, graphical modelling and art.***   * use technology purposefully to create, organise, store, manipulate and retrieve digital content. * recognise common uses of information technology beyond school.   Use simple tools and compare art packages.  Take and explore digital photographs.  E-safety: staying SMART online.  Hector’s world: It’s a serious game. | **C.S.** |
| **I.T.** |
| **D.L.** |
| **Spring 2**  Growing | **Topic: Action algorithms.**  ***Computer science- computational thinking.***   * 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   Explore a range of instructions to understand an algorithm is a precisely defined sequence of instructions or a set of rules for performing a specific task.  E-safety: my personal information.  Hector’s world: the info game | **C.S.** |
| **I.T.** |
| **D.L.** |
| **Summer 1**  Castles | **Topic: Exploring digital sound.**  ***IT and digital literacy- sound.***   * use technology purposefully to create, organise, store, manipulate and retrieve digital content * recognise common uses of information technology beyond school   Explore and evaluate a range of different programs to produce digital sounds.  E-safety: what is email?  Hector’s world: Heroes. | **C.S.** |
| **I.T.** |
| **D.L.** |
| **Summer 2**  Explorers | **Topic: Finding and presenting information.**  ***IT and digital literacy, information, data, the web and technology.***   * 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   Using search engines online information.  Create graphs and introduce concept of databases.  E-safety: Keeping Zibb safe online  Hector’s world: You’re not alone. | **C.S.** |
| **I.T.** |
| **D.L.** |

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| **Year 2** | |  |
| **Autumn 1**  Beside the Seaside | **Topic: Writing in Different Styles.**  ***I.T. and digital literacy.  Text, graphics, multimedia and story-telling.***   * use technology purposefully to create, organise, store, manipulate and retrieve digital content * recognise common uses of information technology beyond school.   Introduce children to word processing and desktop publishing using a number of different tools and design tasks.  *E Safety: To understand that the information I put online leaves a digital footprint.* | **C.S.** |
| **I.T.** |
| **D.L.** |
| **Autumn 2**  The great Fire of London | **Topic: Programming with Scratch Junior.**  ***Computer Science, Control and Programming.***   * 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.   Use computer language to create animations and games.  Write and de-bug algorithms, learn about repeating and different triggers to create actions.  *E Safety:  To be able to identify kind and unkind behaviour online.* | **C.S.** |
| **I.T.** |
| **D.L.** |
| **Spring 1**  Heroes | **Topic: Beginning to Present.**  ***IT & Digital Literacy.  Text, Graphics, Multimedia and Storytelling.***   * 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.   Research and collect information on Healthy Eating.  (Links to Science and D.T. Project)  *E Safety: To use keywords in an online search to find out about a topic.* | **C.S.** |
| **I.T.** |
| **D.L.** |
| **Spring 2**  Local Heroes | **Topic: An Introduction To Animation**  ***I.T. & Digital Literacy.  Animation and Video***  . use technology purposefully to create, organise, store, manipulate and retrieve digital content.  An introduction to animations.  Understanding that animations are made up of a number of still images.  Introduce 2D and stop frame animation and different tools for creating both.  *E Safety:  To recognise whether a website is appropriate for children.* | **C.S.** |
| **I.T.** |
| **D.L.** |
| **Summer 1**  Inventors, Inventions and Machines | **Topic: Making Multimedia Stories**  ***IT & Digital Literacy.  Text, Graphics, Multimedia and Storytelling.***   * use technology purposefully to create, organise, store, manipulate and retrieve digital content. * recognise common uses of information technology beyond school.   Write and create a story and bring it to life with sound and animation.  *E Safety: To rate and review informative websites.* | **C.S.** |
| **I.T.** |
| **D.L.** |
| **Summer 2**  What’s the Weather Like? | **Topic: All About Algorithms**  ***Computer Science Computational thinking***   * 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. * recognise common uses of information technology beyond school.   Build on previous programming work on direction.  Look at other examples of sequencing activities for sequencing algorithms.  Introduce building and programming with Lego WeDo.  *E Safety: To apply our knowledge of safe and sensible online activities to different situations.* | **C.S.** |
| **I.T.** |
| **D.L.** |

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| **Year 3** | |  |
| **Autumn 1**  The Stone Ages | [**Real life algorithms**](https://docs.google.com/a/ntlp.org.uk/document/d/1ttuyTQm6dJqzo62y8vPsZ1N1sx7wElLnmtzmmpQp11Q/edit)  **E-Safety**  To build upon their understanding of e-safety and what it means.  Use of computer applications to design an e-safety message.  Use the internet to research safely.  To understand and use passwords effectively.  [**Real life algorithms**](https://docs.google.com/a/ntlp.org.uk/document/d/1ttuyTQm6dJqzo62y8vPsZ1N1sx7wElLnmtzmmpQp11Q/edit)  To understand what an algorithm is.  Create a simple algorithm.  Apply coding knowledge to create a sequence that can be followed from input to output. | **C.S.** |
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| **Autumn 2**  The stone Ages to Iron Ages | [**Programming Scratch Maze**](https://docs.google.com/document/d/1G3rpwi0TnXYYNdte21olIjmXuMT8g51n7GA7XqAFUU8/edit#heading=h.t7em82cqf1hl) **– Using NT Computer planning Year 3**  To understand and apply simple programming  Be able to design and apply a simple programme to control and stimulate a physical system.  To understand debugging and its effects on an algorithm.  Build adventure maze games and design your own levels, characters and objects to collect. | **C.S.** |
| **I.T.** |
| **D.L.** |
| **Spring 1**  The Romans | **Databases**  [**Databases**](https://docs.google.com/a/ntlp.org.uk/document/d/1HPbjK2kVddIkfLbMP2yGMu1-0V7r4rgd4BwJ_RZCibg/edit)- NT IT Database plans  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 of accessible programmes to show data  Collect, present and evaluate data. | **C.S.** |
| **I.T.** |
| **D.L.** |
| **Spring 2**  The Romans | **Lego-Wedo Controlling Machines- NT Computing Plan Year 3**  **Lego-Wedo Controlling Machines**  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  Children are introduced to various mechanisms used in fairground rides.  They will consider how they are controlled and how they move.  They will build various rides out of Technic Lego.  write and debug programs to control the rides. | **C.S.** |
| **I.T.** |
| **D.L.** |
| **Summer 1**  WWII | **Communication and collaboration- NT Computing plan Year 3**   * 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 * use technology safely, respectfully and responsibly; know a range of ways to report concerns and inappropriate behaviour * Select, use and combine a variety of software (including internet services) on a range of digital devices to accomplish given goals, including collecting, analysing, evaluating and presenting data and information.   Understand and apply knowledge to Google docs | **C.S.** |
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| **Summer 2**  WWII | [**Getting started with Kodu**](https://docs.google.com/a/ntlp.org.uk/document/d/1v35oFeyGZ5lwmW-jvruinhRVybtB3VxyvQgesRCZ-L0/edit)  . 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  *A unit to introduce students to creating games with Kodu.*  *Program your characters and design your 3D worlds to make exciting collecting and racing games.* | **C.S.** |
| **I.T.** |
| **D.L.** |

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| **Year 4** | |  |
| **Autumn 1**  Ancient Egypt | **Communication & Collaboration**  **. 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 technology safely, respectfully and responsibly; know a range of ways to report concerns and inappropriate behaviour**  Children will learn to use their Email in conjunction with Google docs to collaborate in the collection of information and ideas.  They will learn about using the internet/email safely and respectfully.  They will also learn about using the content of the internet safely, effectively and with consideration to copyright law. | **C.S.** |
| **I.T.** |
| **D.L.** |
| **Autumn 2**  The Water Cycle and Rivers | **Presentations**  **. Select, use and combine a variety of software (including internet services) on a range of digital devices to accomplish given goals, including collecting, analysing, evaluating and presenting data and information**  **use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content**  They will then collaborate to produce a presentation about the Water cycle.  Due to the nature of this Computing unit, children could collaborate as part of their homework. | **C.S.** |
| **I.T.** |
| **D.L.** |
| **Spring 1**  The Rainforest | **Programming Games With Kodu/scratch**  **. 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**  Create a working game using the free Microsoft tool-Kodu. Create world, characters, objects to collect, moving the character with the keyboard etc.  Scratch- program a sequence of instructions to present an animation of the water cycle. Add in narration or background music. | **C.S.** |
| **I.T.** |
| **D.L.** |
| **Spring 2**  Producers, Predators and Prey | **Programming Robots- Lego NXT**  **. 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**  Programming Technic Lego robots. Building, programming and debugging to make the robot achieve different tasks. Once the children have had the opportunity to experiment and achieve the tasks they can modify the robots to achieve their own objectives. | **C.S.** |
| **I.T.** |
| **D.L.** |
| **Summer 1**  Great Victorians | **Manipulating Images**  **. select, use and combine a variety of software (including internet services) on a range of digital devices to accomplish given goals, including collecting, analysing, evaluating and presenting data and information.**  Children use 2simple collection to create their own wallpaper design in the style of William Morris. They learn to use many tools to digitally manipulate digital images. | **C.S.** |
| **I.T.** |
| **D.L.** |
| **Summer 2**  Why is Newcastle such a great place to live? | **Digital Literacy- Sound Editing**  **. select, use and combine a variety of software (including internet services) on a range of digital devices to accomplish given goals, including collecting, analysing, evaluating and presenting data and information.**  Linked to the Middle School Transition  In this unit, children build up to writing diary entries about their first day at Middle School. (Book creator)  Children write and rehearse their diary entries then record and edit their digital sound files using Book creator. They then use book creator to design individual pages, including images, regarding their first day at middle school. | **C.S.** |
| **I.T.** |
| **D.L.** |