Computing Curriculum Coverage – Langmoor (Reviewed 2019)

At Langmoor we use the Purple Mash Program to ensure full curriculum coverage.
Computing is taught 1hour a week, three units per term. Children are able to end each unit with a challenge that gives them opportunities to apply the skills they have learnt through the unit. Children's work is saved electronically and is accessible to view by all admin staff/class teachers.
EYFS's units are planned and taught as part of the early learning goals.

		EYFS	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6
Computer science	**Coding and computational thinking**		➢ Grouping and Sorting ➢ Lego building ➢ Maze explorers ➢ coding	➢ Coding	➢ Coding	➢ Coding ➢ Logo	➢ Coding	➢ Coding ➢ Text adventures
Information Technology	**Spreadsheets**		➢ spreadsheets	➢ Spreadsheets	➢ Spreadsheets	➢ Spreadsheets	➢ Spreadsheets	➢ Spreadsheets
	Multimedia and Making sound	➢ Expressive art ➢ Being imaginative	➢ Animation story	➢ Creating pictures ➢ Making music		➢ Animation	➢ Game Creator ➢ 3D Modelling	
	Database and graphing	➢ Number ➢ Shape	➢ Pictograms	➢ Questioning	➢ Branching database ➢ Graphing		➢ Databases	
	Writing and presenting	➢ Reading ➢ Writing		➢ Presenting ideas	➢ Touch typing	➢ Writing for different audiences	➢ Concept Maps	➢ Blogging ➢ Quizzing
Digital Literacy	**Internet and emails**	➢ Listen and attention	➢ Online safety	➢ Online safety ➢ Effective searching	➢ Online safety ➢ Emails	➢ Online safety ➢ Effective Search	➢ Online safety	➢ Online safety
	Communication and networks	➢ Speaking ➢ People and communication ➢ Technology ➢ The world	➢ Technology outside school		➢ Stimulations	➢ Hardware Investigators		➢ Networks

National Curriculum statutory requirements

National Curriculum objectives in KS1
Pupils should be taught to: ❖ Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions ❖ Create and debug simple programs ❖ Use logical reasoning to predict the behaviour of simple programs ❖ Use technology purposefully to create, organise, store, manipulate and retrieve digital content ❖ Recognise common uses of information technology beyond school ❖ Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.

National Curriculum objectives in KS2
Pupils should be taught to: ❖ Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts ❖ Use sequence, selection, and repetition in programs; work with variables and various forms of input and output ❖ Give logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs ❖ Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration. ❖ Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content ❖ Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information ❖ Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Progression of skills in Year 1

Pupils will be taught to:

Coding and computational thinking

- Sort items using a range of criteria.
- Follow and create simple instructions on the computer.
- Consider how the order of instructions affects the result.
- Understand the functionality of the basic direction keys.
- Understand how to change and extend the algorithm.
- Understand how to create and debug a set of instructions.
- Understand how to change and extend the algorithm list.

- Understand what coding means in computing.
- Build one- and two-step instructions using code cards.
- Use design mode to add and change back
- Grounds and characters.
- Use the properties table to change the look of the objects.
- Design a scene for a program.
- Use code blocks to make the characters move automatically.
- Explore a method to code interactivity between objects.
- Use collision detection to make objects perform actions.

Spreadsheets

- navigate around a spreadsheet
- Explain what rows and columns are.
- Save and open sheets.
- Enter data into cells.
- Use the 'lock' tool to prevent changes to cells.
- Give images a value that the spreadsheet can use to count them.

Multimedia and Making sound

- Be introduced to e-books and to 2Create a Story.
- Continue a previously saved story.
- Add animation to a story.
- Add sound to a story including voice recording and music the children have created.
- Work on a more complex story including adding backgrounds and copying and pasting pages.
- Use additional features to enhance their stories.
- Share their e-books on a class display board.

Database and graphing

- Understand that data can be represented in picture format
- Contribute to a class pictogram
- Use a pictogram to record the results of an experiment.

Internet ad emails

- Login safely
- Know how to find saved work
- Know how to search to find resources

Communication and networks

- Understand what is meant by 'technology'.
- Consider types of technology used in school and out of school. 2 to record examples of technology outside school.
- Record examples of technology outside school.

Progression of skills in Year 2

Pupils will be taught to:	
Coding and computational thinking ▪ Create a computer program using simple algorithms. ▪ Understand how use the repeat command. ▪ Understand how to use the timer command. ▪ Know what debugging means. ▪ Understand the need to test and debug a program repeatedly. ▪ Debug simple programs. ▪ Create programs using different kinds of objects whose behaviours are limited to specific actions. ▪ Use all the coding knowledge, they have learned throughout their programming lessons to create a more complex program that tells a story. **Spreadsheets** ▪ Use copying, pasting and totalling tools. ▪ Use a spreadsheet to add amounts. ▪ Create a table of data on a spreadsheet. ▪ Use the data to create a block graph manually. **Writing and presenting** ▪ Examine a traditional tale presented as a mind map, as a quiz, as an e-book and as a fact file. ▪ Make a quiz about a story or class topic. ▪ Talk about their work and make improvements to solutions based on feedback received. ▪ Make a presentation to the class. ▪ Use a variety of software to manipulate and present digital content and information.	**Multimedia and Making sound** ▪ Look at the impressionist style of art (Monet, Degas, Renoir). ▪ Recreate pointillist art and look at the work of pointillist artists such as Seurat. ▪ Look at the work of Piet Mondrian and recreate it using the Lines template. ▪ Look at the work of William Morris and recreate it using the Patterns template. ▪ Explore surrealism and eCollage. ▪ Explore, edit and combine sounds using 2Sequence. ▪ Add sounds to a tune they've already created to change it. ▪ Think about how music can be used to express feelings and create tunes, which depict feelings. ▪ Change the volume of the background sounds. ▪ Created two tunes which depict two feelings. **Database and graphing** ▪ Understand that the information on pictograms cannot be used to answer more complicated questions. ▪ Use yes or no questions to separate information. ▪ Construct a binary tree to separate different items. ▪ Use 2question (a binary tree) to answer questions. **Internet ad emails** ▪ Understand the terminology associated with searching. ▪ Gain a better understanding about searching on the internet. ▪ Create a leaflet to help someone search for information on the Internet

Progression of skills in Year 3

Pupils will be taught to:

Coding and computational thinking

- Create a design that represents a sequential algorithm.
- Use a flowchart design to create the code.
- Explain what object, action, output, control and event are in computer programming.
- Design and write a program that simulates a physical system.
- Look at the grid that underlies the design and relate this to x and y properties.
- Create 'an if' statement in their program.
- Combine a timer in a program with selection.
- Understand what a variable is in programming.
- Use a variable to create a timer.
- Create a program with an object that repeats actions indefinitely.
- Explore the use of repeat commands and how this differs from the timer.
- Debug simple programs.
- Understand the importance of saving periodically as part of the code development process.

Spreadsheets

- Create pie charts and bar graphs.
- Use the 'more than', 'less than' and 'equals' tools to compare different numbers and help to work out solutions to sums.
- Use the 'spin' tool to count through times tables.
- Describe a cell location in a spreadsheet using the notation of a letter for the column followed by a number for the row.
- Find specified locations in a spreadsheet.

Database and graphing

- Understand how YES/NO questions are structured and answered.
- Contribute to a class branching database about fruit.
- Create a branching database.

- Set up a graph with a given number of fields.
- Enter data for a graph.
- Solve an investigation and present the results in graphic form.

Writing and presenting

- Understand the names of the fingers.
- Discuss the need for correct posture when typing.
- Understand what is meant by 'top row', 'home row', 'bottom row' and 'space bar'.
- Use two hands to type the letters on the keyboard.
- Type a series of words with speed and accuracy.

Internet ad emails

- Know what makes a safe password, how to keep passwords safe and the consequences of giving your passwords away.
- Understand how the Internet can be used to help us to communicate effectively.
- Understand how a blog can be used to help us communicate with a wider audience.
- Understand that some information held on websites may not be accurate or true.
- Begin to understand how to search the Internet and how to think critically about the results that are returned.
- Learn about the meaning of age restrictions symbols on digital media and devices.
- Identify some physical and emotional effects of playing/watching inappropriate content/games.
- Relate cyberbullying to bullying in the real-world and have strategies for dealing with online bullying including screenshot and reporting.

- Recognise different methods of communication.
- Open and respond to an email.
- Write an email to someone, using an address book.
- Learn how to use email safely.
- Add an attachment to an email.

Explore a simulated email scenario.

Communication and networks

- Know that a computer simulation can represent real and imaginary situations.
- Explore a simulation.
- Analyse and evaluate a simulation to determine its usefulness for purpose.

Progression of skills in Year 4

Pupils will be taught to:

Coding and computational thinking

- Use a sketch or storyboard to represent a program design and algorithm.
- Use the design to create a program.
- Create an 'if/else' statement.
- Set/change the variable values appropriately.
- Interpret a flowchart that depicts an if/else flowchart.
- Create a program with a character that repeats actions.
- Use the repeat until command to make characters repeat actions.
- Program a character to respond to user keyboard input.
- Make timers and counting machines using variables to print a new number to the screen every second.
- Create an algorithm modelling the sequence of a simple event.
- Manipulate graphics in the design view to achieve the desired look for the program.
- Use an algorithm when making a simulation of an event on the computer.
- Make good attempts to break down their aims for a coding task into smaller achievable steps.
- Take a real-life situation, decompose it and think about the level of abstraction.

- Learn the language of Logo.
- Input simple instructions on Logo.
- Use Logo to create letters.
- Use the Repeat function in Logo to create shapes.
- Use the Build feature in Logo.

Multimedia and Making sound

- Discuss what makes a good animated film or cartoon.
- Learn how animations are created by hand.
- Add backgrounds and sounds to animations.
- Know what stop motion animation is and how it is created.
- Use ideas from existing stop motion films to recreate their own animation.

Internet ad emails

- Understand how children can protect themselves from online identity theft.
- Identify the risks and benefits of installing software including apps.
- Understand that copying the work of others and presenting it as their own is called 'plagiarism' and to consider the consequences of plagiarism.
- Identify appropriate behaviour when participating or contributing to collaborative online projects for learning.
- Select an appropriate website from search results and begin to consider if the content is reliable.
- Identify the positive and negative influences of technology on health and the environment.
- Understand the importance of balancing game and screen time with other parts of their lives.

- Locate information on the search results page.
- Use search effectively to find out information.
- Assess whether an information source is true and reliable.

Communication and networks

- Understand the different parts that make up a computer
- Recall the different parts that make up a computer.

Spreadsheets

- Use the number formatting tools appropriately to format numbers.
- Add a formula to a cell to automatically make a calculation in that cell.
- Use the timer, random number and spin button tools.
- Can use a series of data in a spreadsheet to create a line graph.
- Make practical use of a spreadsheet to help them plan actions.

Explore Place Value with a spreadsheet.

Writing and presenting

- Explore how font size and style can affect the impact of a text.
- Use a simulated scenario to produce a news report.
- Use a simulated scenario to write for a community campaign.

Progression of skills in Year 5

Pupils will be taught to:

Coding and computational thinking

- Design and write a program that simulates a physical system.
- Create a playable, competitive game.
- Combine the use of variables, If/else statements and Repeats to achieve the desired effect in code.
- Read code so that it can be adapted, personalised and improved.
- Explore the launch command and use buttons within a program that launch other programs or open websites.
- Create a program to inform others.

Database and graphing

- Understand the different ways to search a database.
- Contribute to a class database.
- Create a database around a chosen topic.

Multimedia and Making sound

- Begin the process of designing their own game.
- Design the setting for their game so that it fits with the selected theme.
- Design characters for their game.
- Write informative instructions for their game so that other people can play it.
- Evaluate their and peers' games.

- Explore the effect of moving points when designing.
- Understand designing for a purpose.
- Understand printing and making.

Internet ad emails

- Gain a greater understanding of the impact that sharing digital content can have.
- Review sources of support when using technology.
- Know how to maintain secure passwords.
- Understand the advantages, disadvantages, permissions and purposes of altering an image digitally and the reasons for this.
- Be aware of appropriate and inappropriate text, photographs and videos and the impact of sharing these online.
- Learn about how to reference sources in their work.
- Search the Internet with a consideration for the reliability of the results of sources to check validity and understand the impact of incorrect information.

Spreadsheets

- Create a formula in a spreadsheet to convert m to cm.
- Use a spreadsheet to work out which letters appear most often.
- Use a spreadsheet to work out the area and perimeter of rectangles.
- Use text variables to perform calculations.
- Use a spreadsheet to model a real-life situation and come up with solutions that can be practically applied.

Writing and presenting

- Understand the need for visual representation when generating and discussing complex ideas.
- Understand and use the correct vocabulary when creating a concept map.
- Create a collaborative concept map and present this to an audience.

Progression of skills in Year 6

Pupils will be taught to:

Coding and computational thinking

- Design programs using their choice of objects, attributing specific actions to each using their new programming knowledge.
- Use variables within a game to keep track of the properties of objects.
- Debug a program and organise the code into tabs.
- Organise code into functions and Call functions to eliminate surplus code in the program.
- Code programs that take text input from the user and use this in the program.
- Use flowcharts to test and debug a program.
- Create a simulation of a room in which devices can be controlled.

- Describe what a text adventure is.
- Split their adventure-game design into appropriate sections to facilitate coding it.
- Use the 'launch' command in 2Code to bring all the sections of their game together into a playable adventure game.
- Recognise and use map-based text adventures.
- Code a map-based text adventure.
- Use coding concepts of functions, two-way selection (if/else statements) and repetition in conjunction with one another to code their game.

Writing and presenting

- Identify the purpose of writing a blog.
- Identify the features of successful blog writing.
- Plan the theme and content for a blog.
- Understand how to write a blog.
- Consider the effect upon the audience of changing the visual properties of the blog.
- Understand how to contribute to an existing blog.

- Make a picture quiz for young children.
  Consider the audience's ability level and interests when setting the quiz.
- Have ideas about what sort of questions are best suited to the different question types.
- Make a quiz that requires the player to search a database.
- Have used their knowledge of quiz types to create a quiz show quiz based on a curriculum area.

Internet ad emails

- Identify benefits and risks of mobile devices broadcasting the location of the user/device, e.g. Apps accessing location.
- Identify secure sites by looking for privacy seals of approval, e.g. Https, padlock icon.
- Identify the benefits and risks of giving personal information and device access to different software.
- Review the meaning of a digital footprint and understand how and why people use their information and online presence to create a virtual image of themselves as a user.
- Have a clear idea of appropriate online behaviour and how this can protect themselves and others from possible online dangers, bullying and inappropriate behaviour.
- Begin to understand how information online can persist and give away details of those who share or modify it.
- Understand the importance of balancing game and screen time with other parts of their lives, e.g. Explore the reasons why they may be tempted to spend more time playing games or find it difficult to stop playing and the effect this has on their health.
- Identify the positive and negative influences of technology on health and the environment.

Communication and networks

- Know the difference between the World Wide Web and the internet.
- Know about their school network.
- Find out what a LAN and a WAN are.
- Research and find out about the age of the internet.
- Think about what the future might hold.

Spreadsheets

- Create a spreadsheet to answer a mathematical question relating to probability.
- Copy and paste shortcuts.
- Create a machine to help work out the price of different items in a sale.
- Use a spreadsheet to plan pocket money spending.