**Computer Science in Ebor Academy Trust**

This document is a guide for teachers and coordinators to help with the planning and teaching of computer science across the primary phase. The objectives have been displayed in child friendly language with suggested apps and websites included for each year group.

Computer Science Key Terms posters (Barefoot): <https://www.barefootcomputing.org/resources/computer-science-key-terms>

Computer science activities that do not use a computer (5-10)

<https://csunplugged.org/en/>

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| Key Stage 1 | <https://www.bbc.com/bitesize/subjects/zyhbwmn> |

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| Reception | Curriculum Objectives | Resources and Activities |
| * N/A | * Following instructions within class * Directing a friend to an object * Programme a beebot to a designated place. |

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| Year 1 | Curriculum Objectives | Resources and Activities |
| * I can create a series of instructions * I can plan a journey for a programmable toy | * Beebots and bluebots can be used for the whole of ks1 coding. Ideas link - <https://www.youtube.com/watch?v=MK3T9MLbr14> * <https://www.bee-bot.us/emu/beebot.html> (Is a beebot simulator) - Web based * Code.org (block based coding for beginners) lesson 1 onwards <https://studio.code.org/s/pre-express-2018> * IPAD apps * = A.L.E.X, daisy the dinosaur, Bluebot app. |

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| Year 2 | Curriculum Objectives | Resources and Activities |
| * I can use a range of instructions (e.g. direction, angles, turns) * I can test and amend a set of instructions **(debug)** * I can write a simple programme and test it. * I can predict what the outcome of a simple programme will be **(logical reasoning)** * I understand that algorithms are used on digital devices * I understand that programs require precise instructions | * Beebots and bluebots can be used for the whole of ks1 coding. Ideas link - <https://www.youtube.com/watch?v=MK3T9MLbr14> * Cross-curricular link to science to follow and debug algorithms to plant a seed: <https://www.stem.org.uk/resources/elibrary/resource/359614/real-life-algorithms-plant-seed> * <https://www.bee-bot.us/emu/beebot.html> (Is a beebot simulator) - Web based * Code.org (block based coding for beginners) lesson 7 onwards <https://studio.code.org/s/pre-express-2018> * Microbits - using <https://makecode.microbit.org/#> programme your microbit to * Make a name counter   IPAD apps   * = A.L.E.X, daisy the dinosaur, Bluebot app. |

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| Key Stage 2 | **What is computer science?** - <https://www.bbc.com/bitesize/articles/zxgdwmn>  <https://www.bbc.com/bitesize/subjects/zvnrq6f>  Free teaching resources/lesson plans etc: <https://www.barefootcomputing.org/primary-computing-resources> |

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| Year 3 | Curriculum Objectives | Resources and Activities |
| * I can design a sequence of instructions, including directional instructions. * I can write programs that accomplish specific goals. * I can work with various forms of **input**. * I can work with various forms of **output**. | <https://code.org/> - upload your class for individual of paired programming lessons. Good for pre scratch. Detailed lesson plans for support  Watch video on **inputs** and **outputs** here: <https://www.bbc.com/bitesize/clips/zspyb9q>. After watching, provide pictures of various different devices for children to sort into what is an input and output. Discuss what inputs and outputs the children use in everyday life.,   * Scratch junior (app) Block based coding for LKS2 - [Suggested activities](https://medium.com/scratchteam-blog/10-things-to-try-right-now-with-your-child-on-scratch-and-scratchjr-defd7f8ad0d1) * Microbits - using <https://makecode.microbit.org/#> programme your microbit to make a step counter, play rock, paper scissors game. |

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| Year 4 | Curriculum Objectives | Resources and Activities |
| * I can experiment with variables to control models. * I can give on-screen robot specific instructions that takes them from A to B. * I can make an accurate prediction and explain why I believe something will happen (linked to programming). * I can de-bug a program. | <https://code.org/> - upload your class for individual of paired programming lessons. Good for pre scratch. Detailed lesson plans for support  <https://scratch.mit.edu/> - program own stories, games and animations  Online Beebot: <https://www.bee-bot.us/emu/beebot.html> - program beebot online to write out words. Extend to write out sentences. |

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| Year 5 | Curriculum Objectives | Resources and Activities |
| * I can combine sequences of instructions and procedures to turn devices on and off. * I can use technology to control an external device. * I can design algorithms that use repetition and 2-way selection. | <https://scratch.mit.edu/> - program own stories, games and animations  <https://code.org/> - upload your class for individual of paired programming lessons. Good for pre scratch. Detailed lesson plans for support  <https://microbit.org/> - tiny programmable computer, to support coding. Connect to chromebooks |

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| Year 6 | Curriculum Objectives | Resources and Activities |
| * I can design a **solution** by breaking a problem up * I recognise that different solutions can exist for the same problem * I can use **logical reasoning** to detect errors in algorithms * I can use selection in **programs** * I can work with **variables** * I can explain how an **algorithm** works * I can explore ‘what if’ questions by planning different scenarios for controlled devices | <https://scratch.mit.edu/> - program your own stories, games and animations  <https://microbit.org/> - tiny programmable computer, to support coding. Connect to chromebooks  Follow and create an **algorithm** to draw a 2D shape picture and use **logical reasoning** to detect and debug errors (unplugged): <https://www.barefootcomputing.org/resources/2d-shape-drawing-debugging>  Scratch Maths Quiz Variables: <https://www.barefootcomputing.org/resources/scratch-maths-quiz-variables>  Use FlipGrid to record children’s explanations of what an algorithm is.  Advanced:  <https://www.python.org/> - coding language for gifted Y6 children  <http://primarycomputing.co.uk/wp-content/uploads/2013/08/ks2-python-sow.pdf> - Useful Python SOW |

Resources for Teacher CPD

<https://studio.code.org/s/K5-OnlinePD> - Free online CPD through code.org. Learn how to teach computer science using Code.org's Computer Science Fundamentals with this free, self-paced online course.

MicroBits

Year 4/5 - Rock, Paper, Scissors: <https://makecode.microbit.org/projects/rock-paper-scissors> (then have a class tournament!)

Year 6 - Make a watch: <https://makecode.microbit.org/projects/watch/digital-watch> (over multiple lessons)

After school code club

<https://codeclub.org/en/> - uses scratch to teach coding. Full packages for free.