Bournmoor Primary School Cycle A and B Computing

Computer Science			
Computer Science - the study of the foundational principles and practices of computation and computational thinking, and their application in the design and development of computer systems.			
Early Years	**Year 1 / 2**	**Year 3 / 4**	**Year 5 / 6**
Pupils should be taught to: · explore using algorithms · use logical reasoning to predict the behaviour of simple programs	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 · recognise common uses of information technology beyond school	Pupils should be taught to: · design write and debug programs that accomplish specific goals, solve problems by decomposing them in smaller parts · use sequence, selection and repetition in programs · use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs · recognise common uses of information technology beyond school	Pupils should be taught to: · design, write and debug programs that accomplish specific goals; including controlling or simulating physical systems and solving 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
Cycle A Learning Activities			
Early Years (A & B)	**Year 1 / 2 (A)**	**Year 3 / 4 (A)**	**Year 5 / 6 (A)**
Links to Literacy, Maths and Communication & Language through the following: ·Pupils learn to program a basic floor turtle (BeeBot) to navigate a route and talk about ideas to fix it when the turtle does not reach the intended destination. ·Children create a story about the Bee Bot's journey, such as around a local area or a country being studied, sequence events	Programming A – Moving a robot Programming B – Programming animations	Programme A – Sequencing sounds Programming B – Events and actions in programs	Programming A – Selection in physical computing Programming B – Selection in quizzes

within a story being studied. For example, children could guide the Bee Bot between different locations, characters and locations within Little Red Riding Hood.
·Access programming devices suitable for young children e.g.the Code-a-pillar/Vex 1 2 3.
·Children use unplugged activities, or those away from the machine, and have an opportunity to develop their understanding of technology without the need for expensive devices.
·Children give precise instructions verbally, such as through giving instructions to a sandwich making robot, and this links to the importance of using the correct vocabulary, along with speaking clearly and precisely. (Giving instructions also forms part of sessions linked to physical development activities, e.g. rules for games).
·Pupils learn to program and basic floor turtle e.g. Beebot to navigate a route and talk about ideas to fix it when the turtle does not reach the intended destination, also developing directional and positional language skills. (Maths link)

Cycle B Learning Activities			
Early Years (A & B)	**Year 1 / 2 (B)**	**Year 3 / 4 (B)**	**Year 5 / 6 (B)**
Early Years is on a 1-year cycle	Programming A – Robot algorithms	Programming A – Repetition in shapes	Programming A – Variables in games
	Programming B – Programming quizzes	Programming B – Repetition in games	Programming B – Sensing movement

Digital Literacy			
Digital literacy - the ability of learners to use, express themselves and develop their ideas through information and communication technology with regard to safeguarding and online etiquette.			
Early Years	**Year 1 / 2**	**Year 3 / 4**	**Year 5 / 6**
Pupils should be taught to: Use technology safely and learn where to go for help	Pupils should be taught to: · use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content on the internet or other online technologies	Pupils should be taught to: · Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact · use search technologies effectively, appreciate how results are selected and ranked and be discerning in evaluating digital content	Pupils should be taught to: · use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact · use search technologies effectively, appreciate how results are selected and ranked and be discerning in evaluating digital content
Cycle A Learning Activities			
Early Years (A & B)	**Year 1 / 2**	**Year 3 / 4**	**Year 5 / 6**
Links to Personal Social & Emotional Development through the following: ·Children use voice recorders/microphone built into a tablet device, to record feelings/discuss their relationships with others. ·Pupils create their own videos giving online safety guidance to their peers on using technology safely and what to do if they feel worried or concerned when using a device. ·Children access a range of age-appropriate books for to learn about online safety, e,g, Chicken Clicking, Goldilocks (A hashtag cautionary tale) and the free Smartie the Penguin. ·Using voice and video recorders, children self-evaluate their own speaking	Computing systems – Technology around us Data and information – Grouping data	Computing systems and networks – connecting computers Data and information – branching databases	Computing systems and networks – systems and searching Data and information – flat-file databases
Cycle B Learning Activities			
Early Years is on a 1-year cycle	Computing systems and networks – IT around us Data and information – Pictograms	Computing systems and networks – The Internet Data and Information – Data logging	Computing systems and networks – communication and collaboration Data and information – Introduction to spreadsheets

Information Technology			
Information technology - the creative and productive use and application of computer systems, hardware and software			
Early Years	**Year 1 / 2**	**Year 3 / 4**	**Year 5 / 6**
Pupils should be taught to: · Use technology purposefully to create, store, and retrieve digital content · Recognise common uses of information technology beyond school	Pupils should be taught to: · use technology purposefully to create, organise, store, manipulate and retrieve digital content · Recognise common uses of information technology beyond school	Pupils should be taught to: · 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	Pupils should be taught to: 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
Cycle A Learning Activities			
Early Years (A & B)	**Year 1 / 2**	**Year 3 / 4**	**Year 5 / 6**
Links to Understanding the World, Physical Development and Expressive Arts & Design through the following: Children access the role play area with a range of technology (both functioning, model and broken devices) or a variety of electronic toys, such as remote-controlled cars, walkie-talkies and interactive pets, as part of continuous provision. Children use digital cameras to photograph their own learning, ensuring that children select the technology rather than simply being given a device. Children have opportunities to tinker or play with a device, in order to discover how it functions.	Creating media – Digital painting Creating media – Digital writing	Creating media – Stop-frame animation Creating media – desktop publishing	Creating media – Video production Creating media – Introduction to vector graphics

Children become familiar with a range of input devices, including the keyboard and mouse, in order to develop the required fine motor skills. Children may be more familiar with a tablet but ensure access to keyboard/mouse for fine motor skills. Children access opportunities which ensure usage linked to phonics sessions, such as through the use of drill and practice games, including Dance Mat Typing or the Animal Typing app, or other creative outcomes. Children use painting and graphics applications to further develop their keyboard and mouse skills e.g. tablet-based apps such as the free Doodle Buddy. Creative outcomes produced, which allow pupils to take ownership of their work and could be part of an extended project e.g. ·Children can produce mats for Bee Beets to travel around, other physical computing devices, such as Spheros, can be put into paint and controlled using a tablet device to produce images. ·Children can create outfits for the device to wear, such as Bee Bot head dresses or Sphero paper cup people.			
Cycle B Learning Activities			
Early Years is on a 1-year cycle	Creating media – digital photography Creating media – Digital music	Creating media – audio production Creating media – photo editing	Creating media – web page creation Creating media – 3D Modelling

- **See www.teachcomputing.org for key stage 1 & 2 lesson plans and resources**
- **See also 'Education for a Connected World'**