

West Bridgford Junior School - Computing Curriculum Map



At West Bridgford Junior School, we believe that a high-quality Computing curriculum will equip our children with the computational thinking and creativity to understand, respond to and change the world. We follow the Teach Computing scheme for computing which fulfils the requirements of the National Curriculum 2014 through these strands: Networks (NW), Creating Media (CM), Data & Information (DI), Design & Development (DD), Computing Systems (CS), Impact of Technology (IT), Algorithms (AL), Programming (PG), Effective Use of tools (ET) and Safety & Security (SS). The units for key stages 1 and 2 are based on a spiral curriculum. This means that each of the themes is revisited regularly (at least once in each year group), and pupils revisit each theme through a new unit that consolidates and builds on prior learning within that theme. This style of curriculum design reduces the amount of knowledge lost through forgetting, as topics are revisited yearly. It also ensures that connections are made across the units within a theme in consecutive years. This will equip them with the skills and knowledge needed for the future workplace and ensure they become active participants in an ever-changing digital world.

Key Stage 2 National Curriculum Aims and Statement

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.

National Curriculum Statements (NCS). In KS2, pupils should be taught to:

- **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
- **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.

West Bridgford Junior School - Computing Curriculum Map



Year 3

Autumn

Spring

Summer

Computing systems and networks – Connecting computers
(CS, IT, NW)
NCS: 2.2, 2.4, 2.6

Creating media – Stop-frame animation
(CM, CS, DD, ET)
NCS: 2.6, 2.7

Programming A – Sequencing sounds
(AL, CM, DD, ET, PG)
NCS: 2.1, 2.2, 2.3, 2.6

Data and information – Branching databases
(DD, DI, ET)
NCS: 2.6

Creating media – Desktop publishing
(CM, DD, ET, IT)
NCS: 2.5, 2.6

Programming B – Events and actions in programs
(DD, ET, PG)
NCS: 2.1, 2.2, 2.3, 2.6

To explain how digital devices function
To identify input and output devices
To recognise how digital devices can change the way that we work
To explain how a computer network can be used to share information
To explore how digital devices can be connected
To recognise the physical components of a network

To explain that animation is a sequence of drawings or photographs
To relate animated movement with a sequence of images
To plan an animation
To identify the need to work consistently and carefully
To review and improve an animation
To evaluate the impact of adding other media to an animation

To explore a new programming environment
To identify that commands have an outcome
To explain that a program has a start
To recognise that a sequence of commands can have an order
To change the appearance of my project
To create a project from a task description

To create questions with yes/no answers
To identify the attributes needed to collect data about an object
To create a branching database
To explain why it is helpful for a database to be well structured
To plan the structure of a branching database
To independently create an identification tool

To recognise how text and images convey information
To recognise that text and layout can be edited
To choose appropriate page settings
To add content to a desktop publishing publication
To consider how different layouts can suit different purposes
To consider the benefits of desktop publishing

To explain how a sprite moves in an existing project
To create a program to move a sprite in four directions
To adapt a program to a new context
To develop my program by adding features
To identify and fix bugs in a program
To design and create a maze-based challenge

Cross curricular links:

Maths – number problems
Art – design techniques
English – draft and write narratives
History – Romans
PSHE – online privacy and security

Cross curricular links:

Science

Cross curricular links:

English – non-narrative material
PSHE – managing online information

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Year 4

Autumn		Spring		Summer	
Computing systems and networks – The Internet (CM, IT, NW, SS) NCS: 2.4, 2.5, 2.6, 2.7	Creating media - Audio production (CM, CS, DD, DI, ET) NCS: 2.5, 2.6, 2.7	Programming A – Repetition in shapes (AL, ET, PG) NCS: 2.1, 2.2, 2.3, 2.6	Data and information – Data logging (CS, DI, ET) NCS: 2.2, 2.6	Creating media – Photo editing (CM, DD, ET, IT, SS) NCS: 2.6, 2.7	Programming B – Repetition in games (AL, DD, PG) NCS: 2.1, 2.2, 2.3
To describe how networks physically connect to other networks To recognise how networked devices make up the internet To outline how websites can be shared via the World Wide Web (WWW) To describe how content can be added and accessed on the World Wide Web (WWW) To recognise how the content of the WWW is created by people To evaluate the consequences of unreliable content	To identify that sound can be recorded To explain that audio recordings can be edited To recognise the different parts of creating a podcast project To apply audio editing skills independently To combine audio to enhance my podcast project To evaluate the effective use of audio	To identify that accuracy in programming is important To create a program in a text-based language To explain what 'repeat' means To modify a count-controlled loop to produce a given outcome To decompose a task into small steps To create a program that uses count-controlled loops to produce a given outcome	To explain that data gathered over time can be used to answer questions To use a digital device to collect data automatically To explain that a data logger collects 'data points' from sensors over time To recognise how a computer can help us analyse data To identify the data needed to answer questions To use data from sensors to answer questions	To explain that the composition of digital images can be changed To explain that colours can be changed in digital images To explain how cloning can be used in photo editing To explain that images can be combined To combine images for a purpose To evaluate how changes can improve an image	To develop the use of count-controlled loops in a different programming environment To explain that in programming there are infinite loops and count-controlled loops To develop a design that includes two or more loops which run at the same time To modify an infinite loop in a given program To design a project that includes repetition To create a project that includes repetition
<u>Cross curricular links:</u> PSHE – RSE and Health Education, managing online information, copyright and ownership Science – sound English – non-narrative material		<u>Cross curricular links:</u> Science Maths - data		<u>Cross curricular links:</u> PSHE – self-image and identity	

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Year 5

Autumn

Spring

Summer

Computing systems and networks – systems and searching
(CS, DD, ET, IT, NW)
NCS: 2.1, 2.2, 2.4, 2.6

Creating media – Video production
(CM, CS, DD, ET, SS)
NCS: 2.5, 2.6, 2.7

Programming A – Selection in physical computing
(CS, DD, PG)
NCS: 2.1, 2.2, 2.3, 2.6

Data and information – Flat-file databases
(DD, DI, ET)
NCS: 2.5, 2.6

Creating media – Introduction to vector graphics
(CM, DD, DI, ET)
NCS: 2.6

Programming B – Selection in quizzes
(AL, DD, PG)
NCS: 2.1, 2.2, 2.3, 2.6

To explain that computers can be connected together to form systems
To recognise the role of computer systems in our lives
To identify how to use a search engine
To describe how search engines select results
To explain how search results are ranked
To recognise why the order of results is important, and to whom

To explain what makes a video effective
To use a digital device to record video
To capture video using a range of techniques
To create a storyboard
To identify that video can be improved through reshooting and editing
To consider the impact of the choices made when making and sharing a video

To control a simple circuit connected to a computer
To write a program that includes count-controlled loops
To explain that a loop can stop when a condition is met
To explain that a loop can be used to repeatedly check whether a condition has been met
To design a physical project that includes selection
To create a program that controls a physical computing project

To use a form to record information
To compare paper and computer-based databases
To outline how you can answer questions by grouping and then sorting data
To explain that tools can be used to select specific data
To explain that computer programs can be used to compare data visually
To use a real-world database to answer questions

To identify that drawing tools can be used to produce different outcomes
To create a vector drawing by combining shapes
To use tools to achieve a desired effect
To recognise that vector drawings consist of layers
To group objects to make them easier to work with
To apply what I have learned about vector drawings

To explain how selection is used in computer programs
To relate that a conditional statement connects a condition to an outcome
To explain how selection directs the flow of a program
To design a program that uses selection
To create a program that uses selection
To evaluate my program

Cross curricular links:

PSHE – RSE and Health Education, managing online information, online privacy and security, online relationships

Cross curricular links:

Science – electricity
Design & Technology
Maths - Statistics

Cross curricular links:

Art - design
PSHE – self-image and identity

West Bridgford Junior School - Computing Curriculum Map



Year 6

Autumn

Spring

Summer

Computing systems and networks – Communication and collaboration (DD, ET, IT, NW) NCS: 2.4, 2.6, 2.7	Creating media – Web page creation (CM, DD, ET, IT, NW, SS) NCS: 2.5, 2.6, 2.7	Programming A – Variables in games (DD, PG) NCS: 2.1, 2.2, 2.3, 2.6	Data and information – Introduction to Spreadsheets (CM, DI, ET, PG) NCS: 2.6	Creating media – 3D Modelling (CM, DD, ET) NCS: 2.6, 2.7	Programming B – Sensing movement (CS, DD, PG) NCS: 2.1, 2.2, 2.3, 2.6	*Using the microbit for primary to secondary transition*
To explain the importance of internet addresses To recognise how data is transferred across the internet To explain how sharing information online can help people to work together To evaluate different ways of working together online To recognise how we communicate using technology To evaluate different methods of online communication	To review an existing website and consider its structure To plan the features of a web page To consider the ownership and use of images (copyright) To recognise the need to preview pages To outline the need for a navigation path To recognise the implications of linking to content owned by other people	To define a 'variable' as something that is changeable To explain why a variable is used in a program To choose how to improve a game by using variables To design a project that builds on a given example To use my design to create a project To evaluate my project	To create a data set in a spreadsheet To build a data set in a spreadsheet To explain that formulas can be used to produce calculated data To apply formulas to data To create a spreadsheet to plan an event To choose suitable ways to present data	To recognise that you can work in three dimensions on a computer To identify that digital 3D objects can be modified To recognise that objects can be combined in a 3D model To create a 3D model for a given purpose To plan my own 3D model To create my own digital 3D model	To create a program to run on a controllable device To explain that selection can control the flow of a program To update a variable with a user input To use an conditional statement to compare a variable to a value To design a project that uses inputs and outputs on a controllable device To develop a program to use inputs and outputs on a controllable device	To understand how variables and inputs can be used on the micro:bit to create a sports counter To create an algorithm for a sport counter, and code, run and evaluate the use of the micro:bit to count activities To create a countdown timer on the micro:bit using variables To evaluate the effectiveness of the LED display on the micro:bit when used as a timer To modify a program using true and false statements and an if...else command To create an activity completion using a micro:bit counter and a micro:bit timer
<u>Cross curricular links:</u> PSHE – RSE and Health Education, managing online information, copyright and ownership English - composition	<u>Cross curricular links:</u> Maths – number, Statistics		<u>Cross curricular links:</u> Art – design Design & Technology Maths – 3D shapes			