New Invention Junior School Computing Curriculum

James Shea

The National Curriculum states…

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
- 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
- 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.

Area	Year 3	Year 4	Year 5	Year 6
E Safety	VIPERS – NOS story & Roblox Project Evolve	VIPERS – Gaming disorder & Xbox Project Evolve	VIPERS Tik Tok & Whatsapp Project Evolve	VIPERS catfishing & online bullying Project Evolve
Information technology Windows programs	Logging in and using windows MS Word- Night Dragon (English)	MS PowerPoint – Italy presentation (Geography)	MS Publisher – Evacuee guidance (History)	MS Excel (Science fair)
Design, write programs and debug	3.1 Scratch animation unit –translations of (Key French vocabulary)	4.1 Educational response game SCRATCH (Times table quiz)	5.1 Complex input game SCRATCH	App development using Keynote Microbit coding
Computer networks and using the internet	DARES Network Explorer Unit – Spark Video creation	DARES Understand internet Unit – Spark Video creation	Cryptography unit DARES Search Engines Computer science – Spark Page	DARES HTML – The language of the web Seesaw Lesson evidence
iPad project	Pic Collage and Digital Self Portrait	Animated story book on Keynote (Land of Stories)	Digital music Composition on Garage Band AI training a computer	iMovie project – green screen special effects

Each year group will have the freedom to decide the order in which they teach the 5 units – it may be that E Safety is spread throughout the other 4 units rather than taught as a standalone unit.

E Safety should run as a theme through all computing lessons with references to safest practices continually made. If an E Safety issue arises as units are taught then an appropriate intervention will be made whether that be a whole standalone lesson, class assembly or larger assembly.

Year 3 Scheme of work.

Area	Year 3
E Safety	VIPERS – NOS story & Roblox Project Evolve
Windows programs	Logging in and using windows MS Word- Night Dragon (English)
Design, write programs and debug	3.1 Scratch animation unit –translations of (Key French vocabulary)
Computer networks and using the internet	DARES Network Explorer Unit – Spark Video creation
iPad project	Pic Collage and Digital Self Portrait

When children reach key stage two, they are often unfamiliar with the operations of a PC and how they work. It is therefore recommended that the first practical unit should be the Computer networks and using the internet unit where children should familiarise themselves with the layout and operations of a PC.

Area	Objectives to be taught
E Safety	VIPERS about the National Online Safety story VIPERS about Roblox based on National Online Safety leaflet Safer Internet Day Project Evolve Units - Self image and identity - Online relationships - Online reputation - Online bullying - Managing online information - Health, wellbeing and lifestyle - Privacy and security - Copyright and ownership
Windows programs	**MS Word** - How to open windows and create a document. - How to save documents using Save as and save. - How to type and delete - Highlighting - Underline, bold, italics - Changing font type, size colour - Copy and paste images and text to contribute to a document Mastery - Inserting tables - Using Word-art - Bullet-points - Spell check - Backgrounds - Insert header and footer - Insert shapes Final piece – a Word Document produced that showcases the skills learnt during the unit.

Design, write programs and debug	3.1 Scratch animation unit (Refer to Switched on computing) - Create algorithm for animated scene in the form of a story board - Write program in Scratch to create animation - Identify and debug errors in exemplar animations - Correct mistakes in their programs
Computer networks and using the internet	Logging in and using windows - How to login to the computer. - How to open various programs (Internet explorer, MS software, Google Chrome) Network Explorer Understand that the computers in a school are connected together in a network Understand why computers are networked

iPad project	Pic Collage *E Safety – talk about appropriateness of images we should share online (inappropriate images/ inappropriate things in background/ sharing personal information via picture)* - Taking photos to fit a purpose (Think about angle/size of subject/ orientation/ lighting etc) - Using a pre-set grid/ Using a blank canvas - Adding a background - Adding web images - Adding text - Editing text/ text styles - Using colour effectively (theming rather than 1000 colours) - Adding stickers - Animating images/ stickers - Modifying layout for effect - Saving/ sharing finished collages **Could be used to share information on a specific topic, persuade or promote an event and audience could be considered – how would you present if aimed at an adult/ child audience? Digital Self Portrait - I know how to create a digital image using a range of tools, pens, brushes and effects - I understand abstraction is focusing on important information - I can explain how people can represent themselves in different ways online - I can explain ways in which someone might change their identity depending on what they are doing online (e.g. gaming; using an avatar; social media) and why

Year 4 Scheme of work.

Area	Year 4
E Safety	VIPERS – Gaming disorder & Xbox Project Evolve
Windows programs	
	MS PowerPoint – Italy presentation (Geography)
Design, write programs and debug	4.1 Educational response game SCRATCH (Times table quiz)
Computer networks and using the internet	DARES Understand internet Unit – Spark Video creation
iPad project	Animated story book on Keynote (Land of Stories)

Area	Objectives to be taught
E Safety	VIPERS about gaming disorder NOS VIPERS about using an XBOX safely NOS Fake News Xmas E-Safety Safer Internet Day Project Evolve Units - Self image and identity - Online relationships - Online reputation - Online bullying - Managing online information - Health, wellbeing and lifestyle - Privacy and security - Copyright and ownership

Windows programs	**MS PowerPoint** *Build on* - *How to save documents using Save as and save.* - *Highlighting* - *Underline, bold, italics* - *Changing font type, size colour* - *Copy and paste images and text to contribute to a document* - Inserting tables - Using Word-art - Bullet-points - Spell check - Backgrounds and slide design - Insert header and footer - Insert shapes - Adding new slides Mastery - Slide transitions - Transition effects - Rehearsed timings - Loop PowerPoint for use in continuous display
Design, write programs and debug	4.1 Educational response game (refer to Switched on computing) - Develop an educational computer game using selection and repetition - Understand and use variables - Start to debug computer programs (based on examples) - Recognise the importance of user interface design, including consideration of input and output.
Computer networks and using the internet	● Understand the Internet is a worldwide network ● Understand how web pages are viewed across the internet ● Understand the difference between the Internet and the world wide web I know how to use confidently use green screen adding animated backgrounds
iPad project	Animated story book • I know how to create a presentation demonstrating my understanding with a range of media. • I know how to use line draw tool to create animations. • I know how to add animated titles and transitions • I know how to use shapes and drawing tools to create digital art.

Year 5 Scheme of work.

Area	Objectives to be taught
E Safety	VIPERS Tik Tok & Whatsapp Project Evolve
Windows programs	MS Publisher – Evacuee guidance (History)
Design, write programs and debug	5.1 Complex input game SCRATCH
Computer networks and using the internet	Cryptography unit DARES Search Engines Computer science – Spark Page
iPad project	Digital music Composition on Garage Band AI training a computer

Area	Objectives to be taught
E Safety	VIPERS about using Tik Tok (NOS) VIPERS about WhatsApp (NOS) Safer Internet Day Project Evolve Units - Self image and identity - Online relationships - Online reputation - Online bullying - Managing online information - Health, wellbeing and lifestyle - Privacy and security - Copyright and ownership
Windows programs	**MS Publisher** *Build on* - *Inserting tables* - *Backgrounds and slide design* - *Insert header and footer* - *Insert shapes* - *Adding new slides* - Using word art including inserting images into headings - Changing Layout of document (leaflet, orientation etc) - Changing background - Evaluate documents for effectiveness commenting on colours used, visibility of text, effectiveness of pictures, contrast between background and body of document as well as linked to features of text type (English) Mastery - Creating digital documents for online distribution with links to websites and any relevant media - Creating multipage documents with a consistent theme in spite of differing purpose (title page, contents page etc)

Design, write programs and debug	5.1 Complex input game (refer to Switched on computing) - Create original artwork and choose appropriate sound for a game - Design and create a computer program, which uses sequence, selection, repetition and variables - Detect and correct errors in their computer game - Use iterative development techniques (making and testing a series of small changes) to improve their game - Design and make a controller using Makey Makey to control their game
Computer networks and using the internet	5.2 We are cryptographers (refer to Switched on computing) - Be familiar with semaphore and Morse code - Understand the need for private information to be encrypted

	- Encrypt and decrypt messages in simple ciphers - Appreciate the need to use complex passwords and to keep them secure - To know how search engines rank websites based on algorithms - Evaluate websites based on their ability to rank high on a search engine algorithm
iPad project	Digital music composition (Garage Band) - Analyse the use of music in soundtracks and the impact it has on an audience - https://www.youtube.com/watch?v=wHkRiwPJt48 - https://www.youtube.com/watch?v=ecYgqLml89c - Create music using pre-recorded loops - Create own pieces played on digital instruments (could record live instruments) - Add own music to loops to create a piece of music - Create music to fit a specific genre/ theme/ scene - Debug music where drum loops clash - Comment on ineffective music choices and identify the erroneous part. - Share own finished composition and evaluate others (Seesaw) AI Computer training - I can create and train an AI invention using image recognition - I know how to solve problems by decomposing them into smaller parts - I know how to use selection in algorithms - I know how to use logical reasoning to explain how a variety of algorithms work - I know how to evaluate the effectiveness of algorithms

Year 6 Scheme of work.

Area	Year 6
E Safety	VIPERS catfishing & online bullying Project Evolve
Windows programs	MS Excel (Science fair)
Design, write programs and debug	App development using Keynote Microbit coding
Computer networks and using the internet	DARES HTML – The language of the web Seesaw Lesson evidence
iPad project	iMovie project – green screen special effects

Area	Year 6
E Safety	VIPERS on catfishing NOS VIPERS on online bullying and harassment Safer Internet Day Project Evolve Units - Self image and identity - Online relationships - Online reputation - Online bullying - Managing online information - Health, wellbeing and lifestyle - Privacy and security - Copyright and ownership
Windows programs	MS Excel Build on - saving documents - changing font style, size, colour - navigating office toolbars - Data entry - Resizing boxes - Formatting box lines to create tables - Using simple formulae to calculate results - Format cells - Insert simple graphs to best represent data - Discuss the merits and appropriateness of a range of ways to represent data (tables and different styles of graphs) Mastery - Use Autosum to find averages and totals - Sort data in ascending/ descending/ alphabetical order - Using autoflow to continue a pattern

Design, write programs and debug	App/Website development - I know how to confidently choose the best application to demonstrate my learning. - I know how to format text to suit a purpose. - I know how to publish my documents online regularly and discuss the audience and purpose of my content. - I know how to design an app prototype that links multimedia pages together with hyperlinks. - I know how to choose applications to communicate to a specific audience. - I know how to evaluate my own content and consider ways to improve. Microbit coding - I can decompose a design or code to focus on specific parts - I can critically evaluate my work and suggest improvements - I can identify the need for, and work with, variables - I can use a range of sequence, selection and repetition commands to implement my design
Computer networks and using the internet	- Understand what HTML is and recognize HTML tags - Know a range of HTML tags and remix a web page - Create a webpage using HTML
iPad project	iMovie - Evaluate existing projects with similar theme purpose and draw up positive and negative features (Criteria can be created to evaluate finished projects) Recording - Storyboard and plan film considering angle and purpose of shot - Identify locations, angles and purposes of angles - Add a green screen overlay to a video or still image Editing - Adding narration to video clips - Sequencing various scenes and changing the order - Edit transitions between clips - Adding text/ titles/ credit - Inserting photos - Trim and split video - Detaching audio from video or modifying volume level - Adding music and sound effects - Modifying speed - Adding a filter for effect Post creation - Sharing video on Seesaw - Evaluate own and others work using criteria (Seesaw comments)

Computing Curriculum New Invention Junior School