

Linton Heights Curriculum Progression Computing

LKS2 Computer Science I

Pupils learn:

Hardware: Programming of external devices by a computer ROM and RAM. How the size of RAM affects data processing. Fetch, decode and execute cycles History and evolution of computers Bar codes, QR and RFID and identifying devices that read them Data corruption. Networks and data representation Vocabulary associated with data Compression of data & binary & binary signals – Boolean. ASCII Sending messages via binary Bit patterns – pixels Computational thinking Decomposing - animations; - a program; - a story Predicting how software will work from experience Writing more complex algorithms for purpose Decomposing a program into an algorithm Past experiences to solve complex problems Writing complex algorithms. UKS2 Computer Science II Pupils learn: Programming: Programming an animation. Developing their programming Confidently using loops in their programming. Systematic approach to debugging code and using justification. Writing code to create a desired effect. Range of programming commands and use of repetition. Amending code within a live scenario

UKS2 Creating Media

Pupils learn: A stop motion animation is an animation filmed one frame at a time using models, and with tiny changes between each photograph.

Decomposition of an idea is important when creating stop-motion animations. Editing is an important feature of making and improving a stop motion animation.

That radio plays are plays where the audience can only hear the dialogue.

Sound clips can be recorded, edited and trimmed using sound recording software.

LKS2 Creating Media

Pupils learn: How camera shots can make my photos or videos look more effective. How to use film editing software. How to add transitions and text to my video.

Features of web design software. That a website is a collection of connected pages

To know that a homepage and subpages as well as clickable links to new pages, called hyperlinks. About how websites should be informative and interactive.

LKS2 Computer Science I

Pupils learn:

Hardware: About the components and uses of a computer; comparing different computers and what a router does.

Using digital cameras or tablets

Weather stations and sensor weather prediction

Networks and data representation

Key components of a network – wired/ wireless

Functions of a network and links between networks

Websites/ videos – both files shared across computers

The role of packets & data transfers

Computational thinking

Decomposition – parts of a laptop

Code animation and repetition in programs

How algorithms work, their purpose and how to form them

Decomposition to solves a problem by finding its code

Decomposition – script of a code.

Identifying patterns through unplugged activities and using abstraction

Past experiences to solve problems

LKS2 Computer Science II

Pupils learn:

Programming: Logical thinking to explore more complex software

Incorporating loops into a code

Debugging codes

Using abstraction and pattern recognition to modify a code.

Using variables for efficiency

Creating basic algorithms for purpose

Coding a simple game

Year 6

Bletchley Park
History of computers
Online safety- 1 day /Big Data
Intro to Python
Big Data 2
Inventing a product

Year 5

Search engines
Online safety & Micro:bit
Mars Rover-1
Mars Rover-2
Stop motion animation
Music

Year 4

Further coding with Scratch
Collaborative learning
Online safety-1 day
Computational thinking
Investigating weather
Skills showcase
Website design

Year 3

Networks and the internet
Scratch
Online safety - Emailing
Comparison cards databases
Journey inside a computer
Video trailers

UKS2 Information technology

Pupils learn:

Using software Using logical thinking to explore software. Using software programme Sonic Pi/Scratch to create music. Video editing software to animate.

Improving and editing programs, videos, images etc.

Using 3D design software package TinkerCAD

Presentation creation – word processing

Using sound recordings

Creating/ editing videos using multiple elements

Using TinkerCAD to design a product. Creating a website

Using email and internet searches:

Developing search skills. Using search engines and evaluation search returns

Understanding how search engines work

Using data: Data collection in remote or dangerous places- how this data is used to tell us about a location.

How barcodes, QR codes and RFID work.

Gathering and analysing data in real time. Creating formulas and sorting data within spreadsheets.

Wider use of technology: How different forms of communication that have developed with the use of technology.

Internet of Things and how it has led to 'big data'. How 'big data' can be used to solve a problem or improve efficiency

UKS2 Data handling

Pupils learn: That the Mars Rover is a motor vehicle that collects data from space by taking photos and examining samples of rock.

To understand what numbers using binary code look like and be able to identify how messages can be sent in this format.

RAM is Random Access Memory and acts as the computer's working memory.

Data contained within barcodes and QR codes can be used by computers. That infrared waves are a way of transmitting data.

Radio Frequency Identification (RFID) is a more private way of transmitting data. The importance of data encryption.

Data corruption within a network but this is less likely to happen if it is sent in 'packets'. I know that devices or that are not updated are most vulnerable to hackers. To know the difference between mobile data and WiFi.

LKS2 Data handling

Pupils learn: That a database is a collection of data stored in a logical, structured manner. They can be useful for sorting and filtering data.

That a visual representations of data can be made on a computer.

Computers can use different forms of input to sense the world around them so that they can respond to data. This is called 'sensor data'. To know that a weather machine is an automated machine that responds to sensor data. To understand that weather forecasters use specific language, expression and pre-prepared scripts

LKS2 Information technology

Pupils learn:

Using software: Taking photographs & videos.

Using software to edit and enhance videos

Designing and building a web page

Use online software for documents, presentations, forms and spreadsheets.

Using email and internet searches: Log in and out of email account.

Writing/ sending/ replying to an email

Results searching using key words

Searching the internet – accuracy of information/ data

Using data: Database vocabulary

Pros and cons of digital versus paper databases. Sorting and filtering databases.

Interpreting charts/ graphs to understand data.

Data and weather forecasting

Spreadsheet data recording. Sorting spreadsheet data 'sort by'

Designing a device which gathers and records sensor data

Wider use of technology: Purpose of emails. How social media

platforms are used to interact. How software can be used

collaboratively online to work as a team.



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UKS2 Computing systems and networks

Pupils learn: How search engines work. Check the validity of websites. To know that web crawlers are computer programs that crawl through the internet. What copyright is. To know the difference between ROM and RAM.

Understand the need for a secure password and what "brute force hacking" is. The first computers were created at Bletchley Park to crack the Enigma code.

About historical figures that contributed to technological advances in computing. To understand what techniques are required to create a presentation using appropriate software.

UKS2 Digital Literacy

Pupils learn: Possible dangers online and how to stay safe.

Pros and cons of online communication. What to do if they experience bullying online. Learning to use an online community safely

How to create a positive online reputation. Secure passwords and how to create them. Online bullying & how to seek help. Using search engines safely and effectively. How updated software can help to prevent data corruption and hacking.

LKS2 Computing systems and networks

Pupils learn: What a tablet is and differences from a laptop/desktop computer.

What a network is. Purpose of a server. How the internet uses networks to share files. To know that a router connects us to the internet.

Why a packet is important for website data transfer.

Roles that inputs and outputs play on computers.

Email stands for 'electronic mail.' & what an attachment is. Being appropriate and respectful when emailing.

Computer components - CPU, RAM, hard drive, and how they work together.

Collaborative work online using software. How comments and suggestions on a collaborative document can be helpful. To know that you can use images, text, transitions and animation in presentation slides

LKS2 Digital Literacy

Pupils learn: Online information sharing: facts, beliefs and opinions. Reliable information online. How to stay safe on social media. Considering the impact technology can have on mood & cyberbullying. Fake emails.

Judging the accuracy of online searches. Advertising online. Appropriate online behaviour. Respectful and disrespectful online behaviour.

UKS2 Online Safety

Pupils learn: Different ways we can communicate online. How online information can be used to form judgements.

Dealing with online bullying & where to get help. To know that apps require permission to access private information and that you can alter the permissions.

That a 'digital footprint' means the information that exists on the internet as a result of a person's online activity.

Steps are required to capture bullying content as evidence.

The importance of managing personal passwords effectively.

Having a positive online reputation. Common online scams.

UKS2 Programming

Pupils learn: That a soundtrack is music for a film/video and that one way of composing these is on programming software.

Using loops can make the process of writing music simpler and more effective. How to adapt their code while performing their music.

That a Microbit is a programmable device which uses a block coding language similar to Scratch.

To recognise coding structures including variables. To know what techniques to use to create a program for a specific purpose.

About text-based programming languages such as Logo and Python. To know that nested loops are loops inside of loops. To understand the use of random numbers and remix Python code.

LKS2 Online Safety

Pupils learn: Not everything on the internet is true.

The internet can affect your moods and feelings.

Privacy settings limit who can access your important personal information Information, such as your name, age, gender etc. To know what social media is and that age restrictions apply.

Buying things online.

How technology can act like or impersonate living things.

How technology can be a distraction and identify when someone might need to limit the amount of time spent using technology.

LKS2 Programming

Pupils learn: About Scratch and some of its basic functions. Loops usage to improve programming. To understand how decomposition is used in programming. Remixing and adapting of an existing code.

How a variable is a value that can change (depending on conditions).

What a conditional statement is in programming and how variables can help you to create a quiz on Scratch.

Combining computational thinking skills (sequence, abstraction, decomposition etc) can help you to solve a problem.

Pattern recognition means identifying patterns to help them work out how the code works.

Usage of algorithms

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