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| **Lower KS2** | **Computer Science** **(Algorithms and Programming)** | **Understanding technology (Communication and Networks)** | **Digital Literacy (Data & Data Representation, Hardware & Processing and Information Technology):** | **E-safety** |
| **Year 3** | *• To read a simple algorithm**• To use an algorithm to create a program**• To know when there is a bug in my program**• To use a simple sequence in a program**• To use a simple repetition (loops/repeat commands) in a program**• To decompose (break up into smaller parts) a problem both on and off screen**• To predict (using logical reasoning) problems in a program**• To test my program and recognise when I need to debug it.****Key vocabulary****(See Knowledge Organiser)* | * *To know examples of inputs*
* *To know examples of outputs*
* *To know how computers can form a local network*
* *To say when I am and when I am not using an online technology*
* *To be able to save and retrieve work on the Internet, the school network or my own device.*
* *To begin to talk about the parts of a computer*
* *To be able to describe the World Wide Web as the part of the Internet that contains websites.*
* *To use search tools to find an age appropriate website.*

*To think about if I can use images that I find online in my own work.* ***Key vocabulary****(See Knowledge Organiser)* | *• To know what an app or application is**• To use technology to create simple digital content e.g. documents, film etc.* *• Give example of an app used and some of the skills learnt, e.g. iMovie**• To combine a mixture of text graphics and pictures* *• To combine a mixture of text, graphics, pictures and sound/film**• To create and save using a word processing app e.g. Word* *• To print out my digital work**• To use an increasing number of digital resources and apps**• To collect data to help me answer a question.* *• To present data as information for an audience**• To know some examples of search technology**• To choose good key words when searching the internet**• To use a data logger to monitor changes and can ta**lk about the information collected**• To evaluate my work and improve its effectiveness.* ***Key vocabulary****(See Knowledge Organiser)* | * To be familiar with the Be Smart e-safety rules
* To know how to comment and discuss another person’s work respectfully either offline or online
* To know some things, I can share and some I should not share
* To know when to ask for another person’s permission when sharing online
* To identify risks about who and who not to contact online
* To know who to contact about content or contacts that worry me
* To recognise acceptable and unacceptable behaviour when online

To know about passwords and begin to create good ones and keep them safe ***Key vocabulary****(See Knowledge Organiser)* |
| **Year 4**  | • To read a simple program and predict what will happen• To design an algorithm for a program (including with pencil and paper)• To use a more complex sequence in a program• To use a program that controls or simulates control of a physical system• To begin to see similarities and differences between programming languages• To predict (using logical reasoning) problems (bugs) in a program• To predict (using logical reasoning) how to debug a problem in a program• To use logical thinking to solve an open-ended problem by breaking it up into smaller parts (decompose).***Key vocabulary****(See Knowledge Organiser)* | *• To know and give examples of inputs used* *• To know and give examples of outputs used* *• To know there is a difference between the Internet and the World Wide Web**• To recognise some of the services offered by the internet for communication and collaboration* *• To be able to identify key words to use when searching safely and effectively on the World Wide Web.**• To begin to know how to check who owns photos, text and clipart.****Key vocabulary****(See Knowledge Organiser)* | *• To use a presentation app e.g. PowerPoint* *• To create, modify and present documents or other media for a particular purpose.* *• To use an appropriate tool to share my work and collaborate online e.g. a wiki.* *• To give feedback to my peers to help them improve their work and refine my own work.**• To collect data and identify where it could be inaccurate.**• To plan, create and search a database to answer questions**• To choose the best way to present data to my friends.* *• To use a data logger to record and share my readings with my friends**• To evaluate my work and improve its effectiveness by thinking about the audience it is aimed at* *• To identify key words to use when searching safely online****Key vocabulary****(See Knowledge Organiser)* | *•* To be familiar with the Be Smart e-safety rules• To comment positively and respectfully • To explain how to check who owns photos, text and clipart (copyright)• To check the reliability of the information I find or that appears on my device• To protect myself and my friends from harm online, including reporting concerns to a trusted adult• To I know that anything I share online will stay there to be seen and used by others• To choose apps, games and websites that are appropriate for my age and explain my reasons to friends***Key vocabulary****(See Knowledge Organiser)* |



**Computing**

**Learning Journey (Intent)**

**Upper KS2 Computer Science**

**Our Aims**

* can understand and apply the fundamental principles of computer science, including logic, algorithms, data representation, and communication
* 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.

**Pupils are taught through the four strands to:**

* design and write 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; generate appropriate inputs and predicted outputs to test programs
* use logical reasoning to explain how a simple algorithm works 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
* describe how internet search engines find and store data; use search engines effectively; be discerning in evaluating digital content; respect individuals and intellectual property; use technology responsibly, securely and safely
* select, use and combine a variety of software (including internet services) on a range of digital devices to accomplish given goals, including collecting, analysing, evaluating and presenting data and information.

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| **Upper KS2** | **Computer Science** **(Algorithms and Programming)** | **Understanding technology (Communication and Networks)** | **Digital Literacy (Data & Data Representation, Hardware & Processing and Information Technology):** | **E-safety** |
| **Year 5**  | * To read a more complex program
* To explain (using logical reasoning) how a particular algorithm works
* To design and refine an algorithm for a program (including with pencil and paper)
* To create a program that achieves what I want to make
* To decompose a program into smaller steps
* To use a more complex sequence in a program and begin to explain it
* To use repetition (loops) in a program and explain what is happening
* To detect (using logical reasoning) a bug and debug that problem in a program
* To use selection, “if “, and, “then”
* To use a range of inputs and outputs that control or simulates control of a physical system
* can see similarities and differences between programming languages e.g. Flowol and Scratch

To use a variable ***Key vocabulary****(See Knowledge Organiser)* | * *To explain how computer networks work*
* *To know some of the other services besides the web provided by the Internet*
* *To begin to know how search results are ranked*
* *To describe different parts of the Internet.*
* *To use online communication tools e.g. blogging.*
* *To use a search engine to find relevant information*
* *To check the reliability of information found online*
* *To begin to know which resources on the Internet I can download and use*

*To talk about how websites advertise their products to me****Key vocabulary****(See Knowledge Organiser* | * To use and combine text, photo, sound and video editing tools to refine my work
* To use digital devices to take good photos
* To use effects on digital devices to produce effective art/photos/pictures/movies etc. (e.g. green screen)
* can make good choices about which digital content to use
* can make good choices when deciding which digital resources and digital devices to use
* To collect and analyse different types of digital data
* To use data collected to present the data as information for a variety of audiences
* To check the reliability and usefulness of digital content found when searching
* To use a spreadsheet and database to collect and record data
* To use data-logging digital devices to investigate changes around me
* To review, evaluate and improve my own and others’ work

To talk about possible mistakes in data and suggest how it could be checked.***Key vocabulary****(See Knowledge Organiser)* | * know the Be Smart e-safety rules
* know how to review and amend my online identity
* aware of my digital footprint and the impact it can have
* understand what it means to have a positive digital footprint, and why it is important.
* know things I can share and things I should not share and explain the reasons
* know the risks about who and who not to contact online
* know who to report to about content or contacts that worry me
* can recognise acceptable and unacceptable behaviour when online
* I am aware of issues about copyright
* can communicate responsibly and respectfully, recognising the impact on others when this does not happen
* know how to create and use a secure password and username when I am online

beginning to know and use privacy settings when using social media***Key vocabulary****(See Knowledge Organiser)* |
| **Year 6** | * To read a more complex program and predict what will happen
* To design a more complex algorithm (including with pencil and paper)
* To create a more complex program to accomplish a specific goal
* Ton refine my program after testing it
* To decompose a program into smaller steps and use that to help me work more efficiently on it
* To recognise similarities to solutions used before when creating programs and debugging
* To use sequences, repetition selections and variables in a program
* To continually test my programming
* To use a range of inputs (including sensors) and outputs that control or simulates control of a physical system
* To explain (using logical reasoning) how some algorithms work

To detect (using logical reasoning) a bug and debug that problem in an algorithm.***Key vocabulary****(See Knowledge Organiser)* | * To know how information is transported on the Internet
* To begin to know how data travels across networks in packets
* To know how data is broken up into packets and reconstructed when we receive it
* To understand the multiple services provided by the Internet
* To select appropriate tools for online communication and collaboration
* To check the reliability of a website
* To talk about copyright and begin to acknowledge the sources of information that I find online.

To know that websites can use my data to make money and target their advertising***Key vocabulary****(See Knowledge Organiser)* | ***•*** To select the technology for text, photo, sound and video editing tools I want to use to create content, e.g. multimedia presentation• To use and combine a range of media and recognise the contribution of each to achieve a particular outcome• To use a variety of tools and digital devices to creative effective work• To evaluate the effectiveness of my own work and the work of others and use that to improve the work.• To plan an investigation of the world around me, including the data to collect• To select appropriate and effective tools to collect data for my investigation, • To check accuracy, plausibility and reliability of data collected • To present the data collected in an informative way• To examine and ask questions of a database to retrieve relevant information. • To evaluate reliability and usefulness of digital content • To use search technologies effectively to help my learning***Key vocabulary****(See Knowledge Organiser)* | * know the Be Smart e-safety rules
* always communicate responsibly and respectfully, recognising the impact on others when this does not happen
* can work with others to help all enjoy use of technology both online and offline
* know how to help my friends to protect themselves and make good choices online, including reporting any concerns to a trusted adult
* describe ways to keep personal information private online by using safety tools and privacy settings
* explain what it means to have a positive digital footprint, and why it is important.
* make informed choices when selecting apps, games and websites and begin to know the risks of making different choices

Identify different types of online scams people our age may experience, including ‘phishing’***Key vocabulary****(See Knowledge Organiser0* |



**Computing**

**Learning Journey (Intent)**