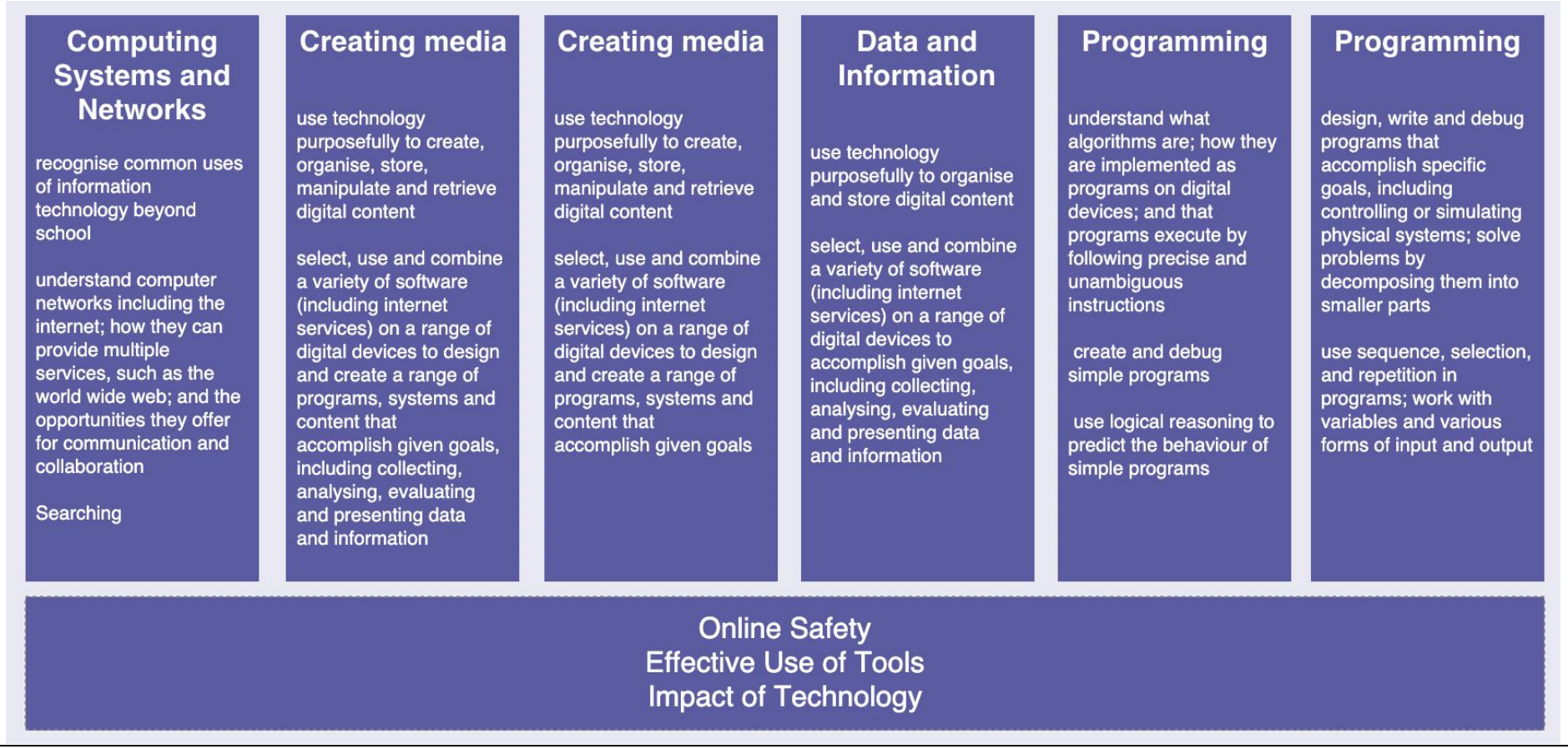
Whinstone Primary School Year 6 Computing

Computing Statement of Intent

Advances in technology impacts on all our lives. Through teaching computing, we aim to equip our children to participate in a rapidly changing world where work and leisure activities are increasingly transformed by technology. It is our intention to enable children to find, explore, analyse, exchange and present information. With the knowledge that Computing will undoubtedly continue to form a major part of the children's lives at home, in further education and places of work, we ensure that the experiences and abilities that the children develop at Whinstone are effective and transferrable life skills. We ensure that online safety learning outcomes are interpreted within contexts that are relevant to the learner's experience and are achieved through learning that is matched to the readiness of the learner. We help our children to become creative at computing through the development of the Key Concepts in computing:



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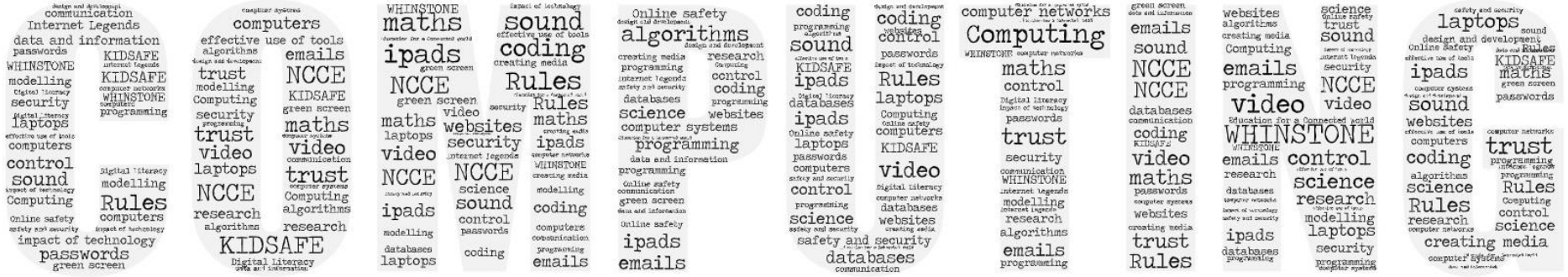
■ Algorithms — Be able to comprehend, design, create, and evaluate algorithms
■ Computer networks — Understand how networks can be used to retrieve and share information, and how they come with associated risks
■ Computer systems — Understand what a computer is, and how its constituent parts function together as a whole
■ Creating media — Select and create a range of media including text, images, sounds, and video
■ Data and information — Understand how data is stored, organised, and used to represent real-world artefacts and scenarios
■ Design and development — Understand the activities involved in planning, creating, and evaluating computing artefacts
■ Effective use of tools — Use software tools to support computing work
■ Impact of technology — Understand how individuals, systems, and society as a whole interact with computer systems
■ Programming — Create software to allow computers to solve problems
■ Safety and security — Understand risks when using technology, and how to protect individuals and systems The taxonomy provides categories and an organised view of content to encapsulate the discipline of computing. Whilst all strands are present at all phases, they are not always taught explicitly.



Computing KS2 National Curriculum

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.

Computing Implementation

Computing is taught as an area of learning, as well as integrated with other curriculum areas where appropriate. There is also flexibility to seize opportunities to celebrate and acknowledge significant events.

Year 6 Computing Implementation – Key Concepts
The Key Concepts of Computing at Whinstone are: - Computer Systems and Networks - Creating Media - Data and Information - Programming - Safety and Security (Whilst all strands are present at all phases, they are not always taught explicitly.)

In Year 6 Computing is taught in discrete lessons under the following broad unit headings:					
Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Computer Systems and Networks Communication	**Data and Information** Spreadsheets	**Programming A** MINECRAFT in Education	**Creating Media** 3D modelling	**Programming B** Selection in Quizzes	**Creating Media** Video Editing

Topic Specific Vocabulary					
Computer Systems and Networks Communication	**Data and Information** Spreadsheets	**Programming A** MINECRAFT in Education	**Creating Media** 3D modelling	**Programming B** Selection in Quizzes	**Creating Media** Video Editing
search engine, refine, Index, crawler, bot, ranking, search engine optimisation, links, web crawlers, Communication, internet, public, private, one-way, two-way, one-to-one, one-to-many,	Spreadsheet, data, data heading, data set, cells, columns and rows. format, common attribute, Formula, calculation, input, output. cells, cell reference, range, duplicate, sigma, comparison, chart	Algorithm, sequence, command, order, conditional Decomposition Variable, loop, debugging,	2D, 3D, 3D object, 3D space, view, resize, lift, Rotate, position, select, duplicate, Dimensions, placeholder, hole, group, ungroup, Modify, evaluate, improve	Selection, condition, true, false, count-controlled loop conditional statement (the linking together of a condition and outcomes), algorithm, program, debug, Implement, evaluate,	Selection, condition, true, false, count-controlled loop conditional statement (the linking together of a condition and outcomes), algorithm, program, debug, Implement, evaluate,

Key Concepts

These key concepts, knowledge and vocabulary will be taught and reinforced through the development of these specific skills. These Key Concepts and vocabulary will be revisited and repeated throughout a child's journey of Computing at Whinstone.

**Safety and Security links to lessons are in RED. Online Safety Strands are taken from the UKCCIS document 'Education for a Connected World' (June, 2020)*

Computer Systems and Networks Communication	**Data and Information** Spreadsheets	**Programming A** MINECRAFT in Education	**Creating Media** 3D modelling	**Programming B** Selection in Quizzes	**Creating Media** Video Editing
To identify how to use a search engine Managing online information Online reputation	To identify questions which can be answered using data	To get to know the basic controls within Minecraft Education Edition	To use a computer to create and manipulate three-dimensional (3D) digital objects Privacy and security	To explain how selection is used in computer programs	To recognise video as moving pictures, which can include audio Managing online information Online relationships Online reputation Self-image and identity

To describe how search engines select results	To explain that objects can be described using data	To build using the inventory's blocks	To compare working digitally with 2D and 3D graphics	To relate that a conditional statement connects a condition to an outcome	To identify digital devices that can record video
To explain how search results are ranked	To explain that formula can be used to produce calculated data	To know the order to make something happen and talk about this as an algorithm.	To construct a digital 3D model of a physical object	To explain how selection directs the flow of a program	To capture video using a digital device
To recognise why the order of results is important, and to whom	To apply formulas to data, including duplicating	To use sequence, selection, and repetition in programs	To identify that physical objects can be broken down into a collection of 3D shapes	To design a program which uses selection	To recognise the features of an effective video
To recognise how we communicate using technology	To create a spreadsheet to plan an event	To work with variables and conditions	To design a digital model by combining 3D objects	To create a program which uses selection	To identify that video can be improved through reshooting and editing
To evaluate different methods of online communication	To choose suitable ways to present data	To solve problems by decomposing them into smaller parts. To use sequence, selection, and repetition in programs	To develop and improve a digital 3D model	To evaluate my program	To consider the impact of the choices made when making and sharing a video

Computing Impact

At the end of each topic teachers will evaluate what knowledge and skills pupils have gained within the Key Concepts. Please see the grid below this one for the 'Education for a Connected World' specific 'I can' statements for meeting expectations. Links are shown here but all aspects of the 'Safety and Security' strand will be covered over the school year within assemblies, extra sessions and PHSE lessons.

SKILLS	Learning Objective	Meeting expectations	Education for a Connected World links

Computer Systems and Networks Communication	To identify how to use a search engine	- I can compare results from different search engines - I can complete a web search to find specific information - I can refine my search	- Managing online information - Online reputation
	To describe how search engines select results	- I can explain why we need tools to find things online - I can recognise the role of web crawlers in creating an index - I can relate a search term to the search engine's index	
	To explain how search results are ranked	- I can explain that a search engine follows rules to rank relevant pages - I can explain that search results are ordered - I can suggest some of the criteria that a search engine checks to decide on the order of results	
	To recognise why the order of results is important, and to whom	- I can describe some of the ways that search results can be influenced - I can explain how search engines make money - I can recognise some of the limitations of search engines	
	To recognise how we communicate using technology	- I can choose methods of communication to suit particular purposes - I can explain the different ways in which people communicate - I can identify that there are a variety of ways of communicating over the internet	
	To evaluate different methods of online communication	- I can compare different methods of communicating on the internet - I can decide when I should and should not share - I can explain that communication on the internet may not be private	
Data and Information Spreadsheets	To identify questions which can be answered using data	- I can answer questions from an existing data set - I can ask simple relevant questions which can be answered using data - I can explain the relevance of data headings	
	To explain that objects can be described using data	- I can apply an appropriate number format to a cell - I can build a data set in a spreadsheet application - I can explain what an item of data is	
	To explain that formula can be used to produce calculated data	- I can construct a formula in a spreadsheet - I can explain the relevance of a cell's data type - I can identify that changing inputs changes outputs	
	To apply formulas to data, including duplicating	- I can apply a formula to multiple cells by duplicating it - I can create a formula which includes a range of cells - I can recognise that data can be calculated using different operations	
	To create a spreadsheet to plan an event	- I can apply a formula to calculate the data I need to answer questions - I can explain why data should be organised - I can use a spreadsheet to answer questions	
	To choose suitable ways to present data	- I can produce a graph - I can suggest when to use a table or graph - I can use a graph to show the answer to questions	

Programming A MINECRAFT in Education	To get to know the basic controls within Minecraft Education Edition	- I can login to Minecraft Education Edition - I can use instructions to access a world ('How to Play' world) - I can use the keys on the keyboard to move, jump, smash and use the inventory	
	To build using the inventory's blocks	- I can use the inventory to find and select blocks - I can use the blocks to build - I can work with other children to build a chosen task	
	To know the order to make something happen and talk about this as an algorithm.	- I can give instructions to an Agent to move - I can predict the outcomes of a set of code (– what will the Agent do?) - I can explain what an algorithm of code can do	
	To use sequence, selection, and repetition in programs	- I can design a set of code - I can explain how to simplify the code - I can use repetition	
	To work with variables and conditions	- I understand what a 'condition' is within code - I can use condition within a set of code	
	To solve problems by decomposing them into smaller parts. To use sequence, selection, and repetition in programs	- I understand what a loop is - I can use a loop within my code - I can use a loop within a loop	
Creating Media 3D modelling	To use a computer to create and manipulate three-dimensional (3D) digital objects	- I can discuss the similarities and differences between 2D and 3D shapes - I can explain why we might represent 3D objects on a computer - I can select, move, and delete a digital 3D shape	- Privacy and security
	To compare working digitally with 2D and 3D graphics	- I can change the colour of a 3D object - I can identify how graphical objects can be modified - I can resize a 3D object	
	To construct a digital 3D model of a physical object	- I can position 3D objects in relation to each other - I can rotate a 3D object - I can select and duplicate multiple 3D objects	
	To identify that physical objects can be broken down into a collection of 3D shapes	- I can create digital 3D objects of an appropriate size - I can group a digital 3D shape and a placeholder to create a hole in an object - I can identify the 3D shapes needed to create a model of a real-world object	

	To design a digital model by combining 3D objects	- I can choose which 3D objects I need to construct my model - I can modify multiple 3D objects - I can plan my 3D model	
	To develop and improve a digital 3D model	- I can decide how my model can be improved - I can evaluate my model against a given criterion - I can modify my model to improve it	
Programming B Selection in Quizzes	To explain how selection is used in computer programs	- I can identify conditions in a program - I can modify a condition in a program - I can recall how conditions are used in selection	
	To relate that a conditional statement connects a condition to an outcome	- I can create a program with different outcomes using selection - I can identify the condition and outcomes in an if..then… else statement - I can use selection in an infinite loop to check a condition	
	To explain how selection directs the flow of a program	- I can design the flow of a program which contains 'if… then… else…' - I can explain that program flow can branch according to a condition - I can show that a condition can direct program flow in one of two ways	
	To design a program which uses selection	- I can identify the outcome of user input in an algorithm - I can outline a given task - I can use a design format to outline my project	
	To create a program which uses selection	- I can implement my algorithm to create the first section of my program - I can share my program with others - I can test my program	
	To evaluate my program	- I can extend my program further - I can identify ways the program could be improved - I can identify what setup code my project needs	
Creating Media Video Editing	To recognise video as moving pictures, which can include audio	- I can explain that a video can include both visual and audio media - I can explain the benefits of adding audio to a video - I can plan a video project using a storyboard	- Copyright and ownership - Online relationships - Online reputation - Self-image and identity
	To identify digital devices that can record video	- I can choose the most suitable digital device for recording my project - I can identify and name digital devices that can record video and sound - I can locate and identify the working features of a digital device that can record video	
	To capture video using a digital device	- I can demonstrate suitable methods of using a digital device to capture my video - I can demonstrate the safe use and handling of devices - I can select a suitable device and software to capture my video	
	To recognise the features of an effective video	- I can explain why lighting and angle are important in creating an effective video - I can list some of the features of an effective video - I can record a video that demonstrates some of the features of an effective video	

	To identify that video can be improved through reshooting and editing	- I can explain how to improve a video by reshooting and editing - I can select the correct tools to make edits to my video - I can store, retrieve, and export my recording to a computer	
	To consider the impact of the choices made when making and sharing a video	- I can evaluate my video and share my opinions - I can make edits to my video and improve the final outcome - I can recognise that my choices when making a video will impact on the quality of the final outcome	

Online Safety and Security Strands are taken from the UKCCIS document 'Education for a Connected World' (June, 2020)		
SKILLS	Learning Objective	Meeting expectations
Online safety and security	Self-image and identity	-I can identify and critically evaluate online content relating to gender, race, religion, disability, culture and other groups, and explain why it is important to challenge and reject inappropriate representations online. -I can describe issues online that could make anyone feel sad, worried, uncomfortable or frightened. I know and can give examples of how to get help, both on and offline. -I can explain the importance of asking until I get the help needed.
	Online relationships	-I can explain how sharing something online may have an impact either positively or negatively. -I can describe how to be kind and show respect for others online including the importance of respecting boundaries regarding what is shared about them online and how to support them if others do not. -I can describe how things shared privately online can have unintended consequences for others. e.g. **screen-grabs**. -I can explain that taking or sharing inappropriate images of someone (e.g. embarrassing images), even if they say it is okay, may have an impact for the sharer and others; and who can help if someone is worried about this.
	Online reputation	-I can explain the ways in which anyone can develop a positive online reputation. -I can explain strategies anyone can use to protect their '**digital personality**' and online reputation, including degrees of **anonymity**.
	Online bullying	-I can describe how to capture bullying content as evidence (e.g **screen-grab**, **URL**, **profile**) to share with others who can help me. -I can explain how someone would report online bullying in different contexts.
	Managing online information	-I can explain how search engines work and how results are selected and ranked. -I can explain how to use search technologies effectively. -I can describe how some online information can be opinion and can offer examples. -I can explain how and why some people may present 'opinions' as 'facts'; why the popularity of an opinion or the personalities of those promoting it does not necessarily make it true, fair or perhaps even legal.

		-I can define the terms 'influence', 'manipulation' and 'persuasion' and explain how someone might encounter these online (e.g. advertising and '**ad targeting**' and targeting for **fake news**). -I understand the concept of **persuasive design** and how it can be used to influences peoples' choices. -I can demonstrate how to analyse and evaluate the validity of 'facts' and information and I can explain why using these strategies are important. -I can explain how companies and news providers target people with online news stories they are more likely to engage with and how to recognise this. -I can describe the difference between on-line **misinformation** and **dis-information**. -I can explain why information that is on a large number of sites may still be inaccurate or untrue. I can assess how this might happen (e.g. the sharing of misinformation or disinformation). -I can identify, flag and report inappropriate content.
	Health, well-being and lifestyle	-I can describe common systems that regulate age-related content (e.g. **PEGI**, **BBFC**, parental warnings) and describe their purpose. -I recognise and can discuss the pressures that technology can place on someone and how / when they could manage this. -I can recognise features of **persuasive design** and how they are used to keep users engaged (current and future use). -I can assess and action different strategies to limit the impact of technology on health (e.g. **night-shift mode**, regular breaks, correct posture, sleep, diet and exercise).
	Privacy and security	-I can describe effective ways people can manage passwords (e.g. storing them securely or saving them in the browser). -I can explain what to do if a password is shared, lost or stolen. -I can describe how and why people should keep their software and apps up to date, e.g. auto updates. -I can describe simple ways to increase privacy on apps and services that provide privacy settings. -I can describe ways in which some online content targets people to gain money or information illegally; I can describe strategies to help me identify such content (e.g. **scams**, **phishing**). -I know that online services have **terms and conditions** that govern their use.
	Copyright and ownership	-I can demonstrate the use of search tools to find and access online content which can be reused by others. -I can demonstrate how to make references to and acknowledge sources I have used from the internet.