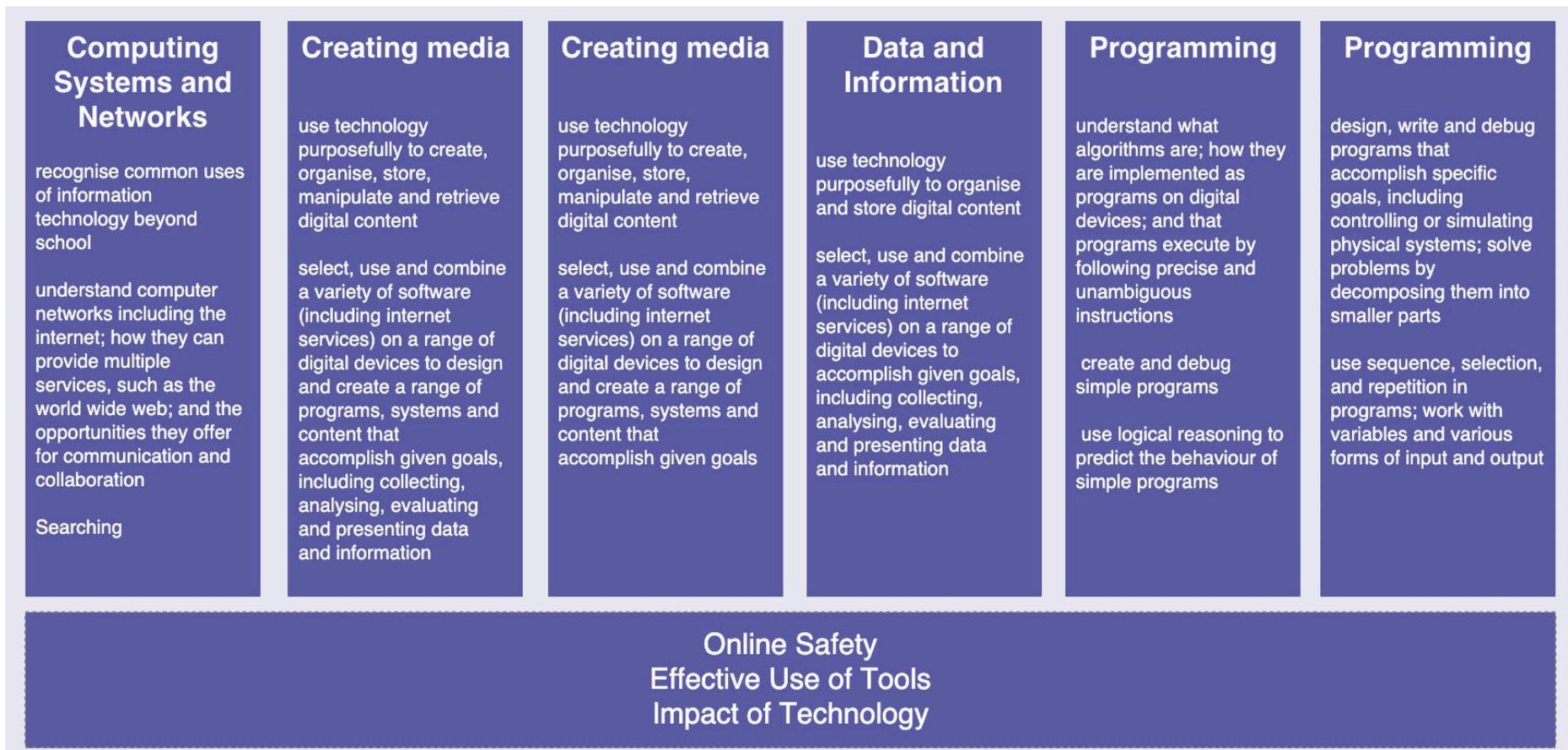




Computing Statement of Intent

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:





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 5 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 5 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 Sharing Information	Data and Information Flat File Databases	Programming A Selection in physical computing (crumbles)	Creating Media Video Editing	Creating Media Vector Drawing (3D printing)	Programming B Selection in Quizzes



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Topic Specific Vocabulary					
Computer Systems and Networks Sharing Information	Data and Information Flat File Databases	Programming A Selection in physical computing (crumbles)	Creating Media Video Editing	Creating Media Vector Drawing	Programming B Selection in Quizzes
System, connection, digital, input, process, output Protocol, address, packet Chat, explore, slide deck Chat, explore Reuse, remix, collaboration	Database, data, information, record, field, sort, order, group Criteria, chart, axis, compare, filter, presentation	Microcontroller, Crumble controller, components, LED, Sparkle, crocodile clips, connect, battery box, program, repetition, infinite loop output devices, motor, count-controlled loop condition, true, false, input selection, action Task, design, selection, repetition, condition, action, algorithm, program, debug, evaluate	Video, audio, recording, storyboard, script, soundtrack, dialogue capture, zoom, storage, digital, tape Video, audio, AV (audiovisual), recording, save, videographer Video techniques: Zoom, pan, tilt, angle Video, lighting, setting, YouTuber, content, light, audio/sound, camera angle, colour Export, computer, Microsoft Movie Maker, split, trim/clip, edit, titles, end credits, timeline, transitions, audio, soundtrack, content, retake/reshoot (choose agreed language) Video, special effects, title screen, end credits, export, constructive feedback	Vector, drawing tools, shapes, object, icons, toolbar object, move, resize, colour, rotate, duplicate/copy Organise, zoom, select, rotate, object, alignment grid, resize, handles, consistency, modify Layers, object, front, back, order Copy, paste, group, ungroup, duplicate, object, vector drawing, reuse Improvement, evaluate, alternatives, vector drawing	Selection, condition, true, false, outcomes, conditional statement (the linking together of a condition and outcomes), algorithm, program, debug selection, condition, outcome, test, run share, evaluate, constructive



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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 Sharing Information	Data and Information Flat File Databases	Programming A Selection in physical computing	Creating Media Video Editing	Creating Media Vector Drawing	Programming B Selection in Quizzes
To explain that computers can be connected together to form systems <i>Copyright and ownership</i> <i>Managing online information</i>	To use a form to record information	To control a simple circuit connected to a computer	To recognise video as moving pictures, which can include audio <i>Managing online information</i> <i>Online relationships</i> <i>Online reputation</i> <i>Self-image and identity</i>	To identify that drawing tools can be used to produce different outcomes <i>Copyright and ownership</i>	To explain how selection is used in computer programs
To recognise the role of computer systems in our lives	To compare paper and computer-based databases	To write a program that includes count-controlled loops	To identify digital devices that can record video	To create a vector drawing by combining shapes	To relate that a conditional statement connects a condition to an outcome
To recognise how information is transferred over the internet	To outline how grouping and then sorting data allows us to answer questions	To explain that a loop can stop when a condition is met, eg number of times	To capture video using a digital device	To use tools to achieve a desired effect	To explain how selection directs the flow of a program
To explain how sharing information online lets people in different places work together	To explain that tools can be used to select specific data	To conclude that a loop can be used to repeatedly check whether a condition has been met	To recognise the features of an effective video	To recognise that vector drawings consist of layers	To design a program which uses selection
To contribute to a shared project online	To explain that computer programs can be used to compare data visually	To design a physical project that includes selection	To identify that video can be improved through reshooting and editing	To group objects to make them easier to work with	To create a program which uses selection



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To evaluate different ways of working together online	To apply my knowledge of a database to ask and answer real-world questions	To create a controllable system that includes selection	To consider the impact of the choices made when making and sharing a video	To evaluate my vector drawing	To evaluate my program
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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 Sharing Information	To explain that computers can be connected together to form systems	<ul style="list-style-type: none"> - I can describe that a computer system features inputs, processes, and outputs - I can explain that computer systems communicate with other devices - I can explain that systems are built using a number of parts 	- Copyright and ownership
	To recognise the role of computer systems in our lives	<ul style="list-style-type: none"> - I can explain the benefits of a given computer system - I can identify tasks that are managed by computer systems - I can identify the human elements of a computer system 	
	To recognise how information is transferred over the internet	<ul style="list-style-type: none"> - I can explain that data is transferred over networks in packets - I can explain that networked digital devices have unique addresses - I can recognise that data is transferred using agreed methods 	
	To explain how sharing information online lets people in different places work together	<ul style="list-style-type: none"> - I can explain that the internet allows different media to be shared - I can recognise that connected digital devices can allow us to access shared files stored online - I can send information over the internet in different ways 	
	To contribute to a shared project online	<ul style="list-style-type: none"> - I can compare working online with working offline - I can make thoughtful suggestions on my group's work - I can suggest strategies to ensure successful group work 	
	Sharing information	<ul style="list-style-type: none"> - I can explain how the internet enables effective collaboration - I can identify different ways of working together online - I can recognise that working together on the internet can be public or private 	



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Creating Media Vector Drawing	To identify that drawing tools can be used to produce different outcomes	<ul style="list-style-type: none"> - I can discuss how a vector drawing is different from paper-based drawings - I can identify the main drawing tools - I can recognise that vector drawings are made using shapes 	- Copyright and ownership
	To create a vector drawing by combining shapes	<ul style="list-style-type: none"> - I can explain that each element added to a vector drawing is an object - I can identify the shapes used to make a vector drawing - I can move, resize, and rotate objects I have duplicated 	
	To use tools to achieve a desired effect	<ul style="list-style-type: none"> - I can explain how alignment grids and resize handles can be used to improve consistency - I can modify objects to create different effects - I can use the zoom tool to help me add detail to my drawings 	
	To recognise that vector drawings consist of layers	<ul style="list-style-type: none"> - I can change the order of layers in a vector drawing - I can identify that each added object creates a new layer in the drawing - I can identify which objects are in the front layer or in the back layer of a drawing 	
	To group objects to make them easier to work with	<ul style="list-style-type: none"> - I can copy part of a drawing by duplicating several objects - I can group to create a single object - I can reuse a group of objects to further develop my vector drawing 	
	To evaluate my vector drawing	<ul style="list-style-type: none"> - I can apply what I have learned about vector drawings - I can suggest improvements to a vector drawing - I create alternatives to vector drawings 	
Creating Media Video Editing	To recognise video as moving pictures, which can include audio	<ul style="list-style-type: none"> - 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 	- Managing online information - Online relationships - Online reputation - Self-image and identity
	To identify digital devices that can record video	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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 	



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Data and Information Flat File Databases	To use a form to record information	<ul style="list-style-type: none"> - I can create multiple questions about the same field - I can explain how information can be recorded - I can order, sort, and group my data cards 	
	To compare paper and computer-based databases	<ul style="list-style-type: none"> - I can choose which field to sort data by to answer a given question - I can explain what a 'field' and a 'record' is in a database - I can navigate a flat-file database to compare different views of information 	
	To outline how grouping and then sorting data allows us to answer questions	<ul style="list-style-type: none"> - I can combine grouping and sorting to answer more specific questions - I can explain how information can be grouped - I can group information to answer questions 	
	To explain that tools can be used to select specific data	<ul style="list-style-type: none"> - I can choose multiple criteria to answer a given question - I can choose which field and value are required to answer a given question - I can outline how 'AND' and 'OR' can be used to refine data selection 	
	To explain that computer programs can be used to compare data visually	<ul style="list-style-type: none"> - I can explain the benefits of using a computer to create graphs - I can refine a chart by selecting a particular filter - I can select an appropriate chart to visually compare data 	
	To apply my knowledge of a database to ask and answer real-world questions	<ul style="list-style-type: none"> - I can ask questions that will need more than one field to answer - I can present my findings to a group - I can refine a search in a real-world context 	
Programming A Selection in physical computing	To control a simple circuit connected to a computer	<ul style="list-style-type: none"> - I can build a simple circuit to connect a microcontroller to a computer - I can explain why I used an infinite loop - I can program a microcontroller to light an LED 	
	To write a program that includes count-controlled loops	<ul style="list-style-type: none"> - I can connect more than one output device to a microcontroller - I can decide which output devices I control with a count-controlled loop - I can design sequences for given output devices 	
	To explain that a loop can stop when a condition is met, eg number of times	<ul style="list-style-type: none"> - I can experiment with a 'do until' loop - I can explain that a condition is something that can either be true or false (eg whether a value is more than 10, or whether a button has been pressed) - I can program a microcontroller to respond to an input 	
	To conclude that a loop can be used to repeatedly check whether a condition has been met	<ul style="list-style-type: none"> - I can explain that a condition being met can start an action - I can identify a condition and an action in my project - I can use selection (an 'if... then...' statement) to direct the flow of a program 	
	To design a physical project that includes selection	<ul style="list-style-type: none"> - I can create a detailed drawing of my project - I can describe what my project will do (the task) - I can identify a condition to start an action (real world) 	



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	To create a controllable system that includes selection	<ul style="list-style-type: none"> - I can test and debug my project - I can use selection to produce an intended outcome - I can write an algorithm to control lights and a motor 	
Programming B Selection in Quizzes	To explain how selection is used in computer programs	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - I can extend my program further - I can identify ways the program could be improved - I can identify what setup code my project needs 	

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	<ul style="list-style-type: none"> -I can explain how identity online can be copied, modified or altered. -I can demonstrate how to make responsible choices about having an online identity, depending on context.
	Online Relationships	<ul style="list-style-type: none"> -I can give examples of technology-specific forms of communication (e.g. emojis, memes and GIFs). -I can explain that there are some people I communicate with online who may want to do me or my friends harm. I can recognise that this is not my / our fault. -I can describe some of the ways people may be involved in online communities and describe how they might collaborate constructively with others and make positive contributions. (e.g. gaming communities or social media groups). -I can explain how someone can get help if they are having problems and identify when to tell a trusted adult. -I can demonstrate how to support others (including those who are having difficulties) online.



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	Online Reputation	<ul style="list-style-type: none"> -I can search for information about an individual online and summarise the information found. -I can describe ways that information about anyone online can be used by others to make judgments about an individual and why these may be incorrect.
	Online bullying	<ul style="list-style-type: none"> -I can recognise online bullying can be different to bullying in the physical world and can describe some of those differences. -I can describe how what one person perceives as playful joking and teasing (including 'banter') might be experienced by others as bullying. -I can explain how anyone can get help if they are being bullied online and identify when to tell a trusted adult. -I can identify a range of ways to report concerns and access support both in school and at home about online bullying. -I can explain how to block abusive users. -I can describe the helpline services which can help people experiencing bullying, and how to access them (e.g. Childline or The Mix).
	Managing online information	<ul style="list-style-type: none"> -I can explain the benefits and limitations of using different types of search technologies e.g. voice-activation search engine. I can explain how some technology can limit the information I am presented with e.g. voice-activated searching giving one result. -I can explain what is meant by 'being sceptical'; I can give examples of when and why it is important to be 'sceptical'. -I can evaluate digital content and can explain how to make choices about what is trustworthy e.g. differentiating between adverts and search results. -I can explain key concepts including: information, reviews, fact, opinion, belief, validity, reliability and evidence. -I can identify ways the internet can draw us to information for different agendas, e.g. website notifications, pop-ups, targeted ads. -I can describe ways of identifying when online content has been commercially sponsored or boosted, (e.g. by commercial companies or by vloggers, content creators, influencers). -I can explain what is meant by the term 'stereotype', how 'stereotypes' are amplified and reinforced online, and why accepting 'stereotypes' may influence how people think about others. -I can describe how fake news may affect someone's emotions and behaviour, and explain why this may be harmful. -I can explain what is meant by a 'hoax'. I can explain why someone would need to think carefully before they share.
	Health, wellbeing and lifestyle	<ul style="list-style-type: none"> -I can describe ways technology can affect health and well-being both positively (e.g. mindfulness apps) and negatively. -I can describe some strategies, tips or advice to promote health and well-being with regards to technology. -I recognise the benefits and risks of accessing information about health and well-being online and how we should balance this with talking to trusted adults and professionals. -I can explain how and why some apps and games may request or take payment for additional content (e.g. in-app purchases, lootboxes) and explain the importance of seeking permission from a trusted adult before purchasing.
	Privacy and Security	<ul style="list-style-type: none"> -I can explain what a strong password is and demonstrate how to create one. -I can explain how many free apps or services may read and share private information (e.g. friends, contacts, likes, images, videos, voice, messages, geolocation) with others. -I can explain what app permissions are and can give some examples.



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	Copyright and Ownership	<ul style="list-style-type: none">-I can assess and justify when it is acceptable to use the work of others.-I can give examples of content that is permitted to be reused and know how this content can be found online.
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