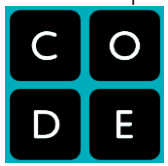
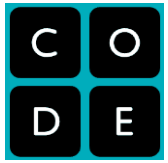
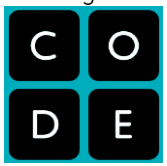
South Gosforth First School – Computing

Long Term Planning – Year 4

Term:	Autumn		Spring		Summer	
	1	2	1	2	1	2
E-safety	What is SMART on the internet?	Am I a great digital citizen?	Am I checking the reliability of internet sources?	What software is harmful?	What are the advantages and disadvantages offered by technology?	Why do people seek out popularity on the internet?
Computing Lesson Topics	Animation  ilearn2 block	Sprites and Digital Citizenship  Code.org	3D Design  ilearn2 block	Nested Loops and Functions  Code.org	Conditionals – Final Project  Code.org	Physical Coding  Code.org
Computing Curriculum Area	- Animation – Information Technology / Computer Science - Code.org - Computing Science		- 3D Design – Information Technology - Code.org - Computing Science		- Code.org - Computing Science - Physical Coding - Computer Science	
Cross curricular areas	- Mosaic inspired digital art – Information Technology		- Design – Information Technology		- Music Editing and Manipulation – Information Technology	
National Curriculum Objectives	- 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 - select, use and combine a variety of software		- 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 - select, use and combine a variety of software		- 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	

	(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.	(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. - use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration - 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.
eSafety activities	E-safety Band Runner Episode 1: Unkind messages - Discuss what is acceptable to write online making clear links with behaviour in school and the wider world. - Clear recap of different ways to report things if something online upsets you. Band Runner Episode 2:Sharing Photos Who's permission do you have to seek to share photos? What was wrong about the children sharing the photo at the beginning of the episode? Should we always trust what we read online? How many problems can you identify in this video? Set stage for following lesson – are the children suspicious of Magnus? Band Runner Episode 3: temptation	E-safety Tree Octopus - Reliability lesson – without context direct the children to a website about the pacific northwest tree octopus and ask them to research it. - Do any children use safesearch to check if the information is reliable? Who writes the information? - Explore what Wikipedia is and how you must be careful what information that you trust - Explain that anyone can edit Wikipedia but that most pages are checked and the sources are listed at the bottom of the page. Recapping Games - Children to play a range of games to recap their internet safety - Kindness Kingdom - Mindfulness Mountain	E-safety HTML heroes - Use the video to start a conversation about advantages that the internet and technology offers. - Move on to talk about how this should be balanced with exercise and what potential negative effects could result from too much screen time #Goldilocks - Use this story to explore the pitfalls of a cyber-existence and why people try so hard to be popular on the internet. - Lead on to a conversation about how people that overly prize their online existence can run into trouble. - Link discretely with gamers and streamers who have been caught cheating and cast out from the community as well as people who have

	Reminder that anyone who you have not met is a stranger. What different steps should they have taken in dealing with this situation? Though it turns out that the situation was a prank played by other children and simply wasted their time – what could have happened? <u>Being a great digital citizen</u> - Learning about how to deal with online threats and cyberbullying - Identification of personal and private information - Explanation of copyright and ownership	- Band Runner game - Judge which they think is the most effective and how games can be used to teach children about eSafety. <u>What are viruses and malware?</u> https://www.bbc.co.uk/bitesize/topics/zd92fg8/articles/zcmbgk7 - use this website to explore what viruses are. - Learn about a variety of damaging software and how to protect your system. - Clear recap that if a mistake is made and you think that there is a virus on your technology that you must **Tell** a trusted adult.	actually been arrested for online pranks that have gone wrong.
Suggested Activities	<u>Animation</u> - First lessons will cover how to duplicate slides and move objects slowly to create a stop motion animation. - Using the morph transition to create smooth animations from one slide to another - Using motion paths to create interactive graphics - Create a diagram of Roman fighting formations. <u>Coding – Code.Org Course E</u> <u>Lessons 1-7</u> - Recap what a sprite is and how it can be coded and manipulated to create the illusion of movement. - Practise giving clear concise instructions to a partner. - Creating of simple dance in sprite lab by coding a sprite to change it's performance. - Create an interactive poster inspired by eSafety.	<u>3D Design</u> - Using 3D village - re-create different types of buildings using 3D shapes. - Create roads/paths by adjusting the height of 3D shapes then add windows and door shapes. - Use Lego modelling to add, move, rotate, change colour and duplicate a brick. - Use sloping bricks and special bricks for a purpose. - Change the transparency of bricks. <u>Coding – Code.org Course E</u> <u>Lessons 8-13</u> - Using nested loops to create artwork - Clearly link maths and degrees to points of turn. - Use blocks to create efficient code which moves an NPC (Non player character) to specific locations. - Creating specific functions to make your code more compact. - Apply these new functions to game based and app contexts.	<u>Coding – Code.org Course E</u> <u>Lessons 14-17</u> - Recap previous conditional code written - Write simple conditional code to execute a function until a goal is achieved. - Recap and combine if/else blocks then combine them with functions to write efficient code that completes the desired job. - Create an end of course project combining all their coding skills learned throughout SGFS <u>Physical Coding</u> - Children will re-explore the micro:bits and how to use them to perform a variety of functions. - Children will create an interactive owl which must be able to act independently - This will be their final coding project at SGFS and should represent the apex of their coding ability

Prior Learning & Understanding – 'Why here, why now?'	E-safety - Children will recap eSafety principals at the start of Year 4 to be sure that they have remembered a sensible approach to online conduct. - This series of videos will start to explore why people might impersonate others and how to avoid potential pitfalls as the children start reaching an age when they are likely to start interacting with others online more frequently. Animation - Children have used Junior Infant Tools animate website and ABCYa Make An Animation website to create simple animations in year 2. - Children will be familiar with selecting and deselecting objects and manipulating them through the variety of programs they have used throughout the computing curriculum. - They will be equipped with the knowledge that they need for context from their History lessons. Code.org - Children have create algorithms, loops, nested loops to achieve various purposes through their computing so far. - We will look to apply these skills to specific outcomes in year 4. - The children will be grounded in eSafety to use this as a relevant context for an interactive poster.	E-safety - Children should understand the importance of checking the reliability of multiple sources to check if they can trust information. - Children have experience of creating simple games this eSafety could then be used a context to create a relevant game 3D Design - Children have used a variety of software to create digital art but mostly in a 2D plane so far. - Their knowledge and experience of 3D shapes should be improving by this point and the use of these kind of design tools will help them in the future. Code.org - Functions are another way for the children to make their coding more efficient and use fewer blocks which is very important as their coding becomes more complex. - The have created code for a sprite they are controlling, their next logical step is to create code for NPCs - The context of creating art will be carried over from the previous coding group of lessons. - They have experience of angles in maths which can be applied in their art.	E-safety - The children will have acute experience of online personalities at this point and need to understand how seeking clicks and popularity can lead to undesirable behaviour. - It is important to remind the children of the advantages that technology can offer as well as how that should be balanced with exercise and seeing their friends. - We have explored reliability and will now delve deeper into why certain webpages and sources may be unreliable on the internet. Code.org - The children have previously used conditionals last year to execute simple functions. This will now be adapted to a game context. - Children have learned how to use algorithms, loops, nested loops, functions and conditionals throughout their time at SGFS and will now apply those skills in a project. Physical Coding - The children have learnt how to code throughout their time at SGFS. - They should be equipped with the skills both in physically crafting and coding to receive this commission.
Key Skills	E-safety - Recap of prior knowledge e.g. SMART rules, who are their trusted adults? - Identification of suspicious behaviour - Knowledge and understanding of how and why someone might impersonate someone else	E-safety - Rule of three – checking three credible sources before trusting a piece of information. - Identification of strategies used by games to teach online safety.	E-safety - Identification of differences between cyber-existence and real existence. - Recognition of the importance of the author in bias and reliability of information. - Explanation of consequences of poor online conduct.

	Animation - Duplicating of slides and navigation of multi-page documents. - Improved control of the mouse and selecting and deselection of different objects. - Employment of transitions to create different effects. - Specific use of the morph transition to create smooth transitions between slides. - Create and edit paths to move objects precisely Code.org - Define a sprite – a drawing on screen which can be coded to give the impression of movement. - Create a sprite - Code both the sprite and background to create a scene. - combining event code to start to create simple interactive programs	3D Design - Understand 3D spatial awareness - Add 3D shapes, resize, adjust height, duplicate and use the different perspective. - Use transparency and rotation to be able to accurately view a project. Code.org - Recap what a nested loop is and use them to create a variety of digital art - Write and execute functions - Further streamline and condense their code. - Apply functions in different contexts.	Code.org - Use of while, if/else and until blocks to create conditional code. - Application of that code to perform desired jobs. - Combination of previous coding skills to achieve new aims. Physical Coding - Physically coding the board - Uploading code from their laptop - Crafting the housing - Attaching relevant components.
Opportunities for Cross-curricular work	 Mosaic inspired digital Art - inserting an image from safesearch - using the freeform tool to create a digital mosaic - using the pipette tool to create each specific shade	 Data Handling – Maths/Science - Using Excel to create some simple games (battleships then a multiplication game) - Code cells with simple formula and create some graphs to show different data sets	 Music Editing and Manipulation - Use Audacity to blend several samples to create a mix that the children want to tell a story. - Manipulate waveforms to create new and unusual sounds to create an otherworldly atmosphere. - Create a specific soundscape to set to a film PSHE – Designing for Accessibility - How can apps and games be designed to be inclusive for people who have disabilities?

Key Vocabulary	E-safety hacked impersonating social media following clicks popularity permission ownership copyright	Animation order transition timing path animate automatic	Coding algorithm run/execute block sprite event background interactive	E-safety virus malware tro jan spyware rank clicks	3D Design reposition resize enlarge reduce rotate layer transparency spatial awareness	Coding algorithm loop function optimized efficiency NPC repeat repetitive action	E-safety consequences cyber existence real existence legality popularity clicks screen time	Coding function conditional if/else while until algorithm loop event product	Physical Coding component board upload interactive sensor react independent
Pupil Outcomes	E-safety - Children recall the SMART rules from year 3 - Children are aware that people are not always who they say they are on social media. - Children understand why some one might impersonate another online. - Children will create an interactive poster Animation Chiuldren will create a simple stop motion animation Children will be able to use transitions to achieve specific effects with a presentation. Children will be able to create and edit paths to move objects Children will create a polished animation using all these skills. Code.org - Children will create sprites and be able to code them to move, stop and perform various actions. - Children will write event code to change a sprites behaviour - Children will create an interactive poster to teach other children about what information is safe to share publicly and what should be kept private.			E-safety - Clear understanding of the rule of three. - Children will carefully choose which websites they believe. - Children will identify a variety of damaging software. 3D Design - The children's 3D spatial awareness will improve - Children will recreate buildings and design a street. - Children will recreate landmarks using a wider range of 3D blocks Code.org - Children will create nested loops to create technical drawings. - Children will use nested loops to create an original design. - Children to write and execute functions to achieve simple aims.			E-safety - Children will understand the lure of popularity. - Children will appreciate real world consequences of online conduct. - Children will understand negative consequences of too much screen time. Code.org - Children will write conditional code using a wider variety of blocks to complete various jobs. - Children will understand how games and apps can be more inclusive and adapted for different people. - Children will use their knowledge of coding to create a final project. Physical Coding - Children will receive a commission and be able to plan a product to meet those criteria. - Children will fabricate and code the product to meet that specification.		