Computing Curriculum

2024-2025

MPPS Computing Curriculum

This document shares the school's Computing curriculum from EYFS to Year 6. It also shares in more detail knowledge, skills and vocabulary expected to be taught. NCCE materials, which have been funded by the DFE, are used to support the teaching of Computing. Whilst the EYFS Framework is structured differently to the national curriculum, we aim to show how Communication and Language, Literacy and Knowledge and Understanding of the world, feeds into the Computing national curriculum programmes of study, preparing Reception children for Year 1. To ensure our pupils have a thorough understanding of how to keep themselves safe online, we also use Natterhub throughout Key Stage 2.

Computing Long Term Planning (Using the NCCE teaching resources and Natterhub)

	Autumn		Spring		Summer	
EYFS	As the EYFS framework is structured differently to the national curriculum, the children are exposed to Computing across the year to help them in readiness for KS1 and the start of the Year 1 curriculum. Throughout the year, children access computers, the Interactive Smart Board, listening stations, iPads and the Holodeck. Children can see other technology outside of the classroom, including using the photocopier and taking photographs.					
Year 1	**Natterhub Term 1 Lessons** Balance It: Rockin' Rules Chat it: My Online Avatar **Creating Media – Digital Painting** Look at a program where they will be able to choose appropriate tools to create art and make comparisons with working non-digitally	**Natterhub Term 1 Lessons** Feel it: Villains In Our Fairy Tales Question it: Internet Quest **Programming A - Moving a Robot** Write a short algorithm and programs for floor robots and predict the program outcomes	**Natterhub Term 2 Lessons** Learn it: My Wonderful Work Mind it: My Online Profile **Data and information – Grouping information** Explore object labels, then using them to sort and group objects by properties	**Natterhub Term 2 Lessons** Secure it: Why I Should Check Before I Share Think it: Goodies and Baddies **Creating Media – Digital Writing** Use a computer to create and format text. Once children have created a short piece of text, they will compare to writing non-digitally	**Natterhub Term 3 Lessons** Balance it: Sensible Screen Use Chat it: Online v F2F communication **Creating Media – Digital Writing (Cont..)**	**Natterhub Term 3 Lessons** Feel it: Be Kind and Caring Question it: Super Searches **Programming B Animation** and program the movement of a character on screen to tell stories
Year 2	**Natterhub Term 1 Lessons** Balance it: Devices and Screen Time Feel it: Sticks and Stones	**Natterhub Term 1 Lessons** Question it: Online Navigators	**Natterhub Term 2 Lessons** Learn it: The Work of Others Mind it: Follow the Digital Footprint	**Natterhub Term 2 Lessons** Secure it: Protecting my Privacy Think it: Fake Profiles	**Natterhub Term 3 Lessons** Feel it: Be Brave; Stand Tall Question it: Real and Reliable	**Programming B Introduction to Quizzes** Design algorithms and programs that use events to trigger

	Creating Media- Digital Photography Capture and change digital photographs for different purposes.	**Programming A – Robot Algorithms** Create and debug programs. They will also use logical reasoning to make predictions.	**Data and Information – Pictograms** Collect data in tally charts and use attributes to organise and present data on a computer	**Creating Media – Making Music** Use a computer as a tool to explore rhythms and melodies, before creating a musical composition.	**Creating Media – Making Music (Cont….)**	sequence of code to make an interactive quiz
Year 3	**Natterhub Term 1 Lessons** Balance it: When Screen Time Goes on Too Long Chat it: Making New Friends Online **Creating Media – Stop Frame Animation** Capturing and editing digital still images to produce a stop-frame animation that tells a story	**Natterhub Term 1 Lessons** Feel it: Affect Reflect Question it: Buy or Sell **Programming A – Sequence in Music** Creating sequences in a block-based programming language to make music	**Natterhub Term 2 Lessons** Learn it: Other People's Projects Mind it: Identifying information **Data and Information – Branching Databases** Building and using branching databases to group objects using yes/no questions	**Natterhub Term 2 Lessons** Secure it: Choose Wisely: Should I Share? Think it: Real-Life and Online Identity **Creating Media- Desktop Publishing** Create documents by modifying text, images and page layouts for a specified purpose.	**Natterhub Term 3 Lessons** Feel it: Look Closely Question it: Right or Wrong **Creating Media- Desktop Publishing (cont…)**	**Programming B Events and Actions** Writing algorithms and programs that use a range of events to trigger sequences of actions
Year 4	**Natterhub Term 1 Lessons** Balance it: Time on Technology Chat it: The What and the Why **Creating Media – Audio Editing** Capturing and editing audio to produce a podcast, ensuring that copyright is considered.	**Natterhub Term 1 Lessons** Feel it: Where on the Web? Question it: Opinions, Beliefs and Facts **Programming A – Repetition in shapes** Using a text-based programming language to explore count-controlled loops when drawing shapes	**Natterhub Term 2 Lessons** Learn it: Copyright Concerns Mind it: My Personal Information Online **Data and Information – Data Logging** Recognising how and why data is collected over time, before using data loggers to carry out an investigation	**Natterhub Term 2 Lessons** Secure it: They Want To Be Me Think it: Online Identities **Creating Media- Photo Editing** Manipulating digital images and reflecting on the impact of changes and whether the	**Natterhub Term 3 Lessons** Chat it: Choosing a Safe Screen Name Feel it: Pause Before You Post **Creating Media- Photo Editing (Cont…)**	**Natterhub Term 3 Lessons** Question it: But Is It True? **Programming B Repetition in Games** Using a block-based programming language to explore count-controlled and infinite loops when creating a game.

				required purpose is fulfilled		
Year 5	**Natterhub Term 1 Lesons** Chat it: Recognising Negative Behaviour Feel it: Banter or Bullying **Creating Media- Video Editing** Planning, capturing, and editing video to produce a short film.	**Natterhub Term 1 Lessons** Question it: Searching Skills **Programming A – Selection in Physical Computing** Exploring conditions and selection using a programmable microcontroller	**Natterhub Term 2 Lessons** Think it: Online identity Learn it: Search for skills **Data and Information – Flat File Database** Using a database to order data and create charts to answer questions	**Natterhub Term 2 Lessons** Mind it: Facts or Fiction Secure it: Intrusive Apps **Creating Media – Vector Drawing** Creating images in a drawing program by using layers and groups of objects.	**Natterhub Term 3 Lessons** Chat it: Feeling Left Out Question it: Misinformation and disinformation **Creating Media – Vector Drawing (Cont…)**	**Programming B Selection in Quizzes** Exploring selection in programming to design and code an interactive quiz.
Year 6	**Natterhub Term 1 Lessons** Chat it: Our Class Code of Conduct Feel it: Getting Help and Reporting Concerns **Creating Media- Web Creator** Designing and creating webpages, giving consideration to copyright, aesthetics, and navigation.	**Natterhub Term 1 Lessons** Question it: Using Search Engines Effectively **Programming A – Variables in Games** Exploring variables when designing and coding a game.	**Natterhub Term 2 Lessons** Learn it: Technology for Good Mind it: My Online Reputation Secure it: How to Password **Data and Information – Spreadsheets** Answering questions by using spreadsheets to organise and calculate data.	**Natterhub Term 2 Lessons** Secure it: How to Password **Creating Media – 3D Modelling** Planning, developing, and evaluating 3D computer models of physical objects	**Natterhub Term 3 Lessons** Balance it: Online Temptations and Pressures Chat it: Think Before You Share **Creating Media – 3D Modelling (Cont…)**	**Natterhub Term 3 Lessons** Feel it: Gathering Evidence Question it: The Art of Persuasion **Programming B Sensing** Designing and coding a project that captures inputs from a physical device.

Year 7 Computing Curriculum at Moor End Academy

E-safety	Web graphics	Kodu and Scratch	Microbit	Computational Thinking	App Development

Computing Curriculum Narrative in Detail

Early Years Framework
ELG: **Communication and Language, Literacy and Knowledge and Understanding of the World** In EYFS, children are taught about the computers and their use inside and outside the classroom. Through continuous provision the children are able to access the computers, where they can access educational games, creative software and being able to listen to and watch stories. At times, children are able to access the listening station to use CD players to listen to stories and use the IWB to support their mark making, which can lead to writing. Additionally, children use iPad and the Holodeck room, which supports their Understanding of the World. The Holodeck provides a range of scenarios and backdrops, which is used to share different aspects of the world: seasons, places, stories and other activities.
National Curriculum Key Stage 1
Key Stage 1 - Pupils should be taught to: ♣understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions ♣ create and debug simple programs ♣ use logical reasoning to predict the behaviour of simple programs ♣ use technology purposefully to create, organise, store, manipulate and retrieve digital content ♣ recognise common uses of information technology beyond school ♣ use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.
Key Stage 2
Key Stage - 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.

Year 1-6 Curriculum in Detail

Year 1	National Curriculum	Objectives (From NCCE)	Skills (Based on NCCE Learning Graphs)
Natterhub – Online Safety Learning programme.	• Pupils should be taught to use technology purposefully to create, organise, store, manipulate and retrieve digital content. • Pupils should be taught to recognise common uses of information technology beyond school. • Pupils should be taught to use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	• I can recognise that there may be people online who could make someone feel sad, embarrassed or upset. • If something happens that makes me feel sad, worried, uncomfortable or frightened I can give examples of when and how to speak to an adult I can trust and how they can help. • I can use the internet with adult support to communicate with people I know (e.g. video call apps or services). • I can explain why it is important to be considerate and kind to people online and to respect their choices. • I can explain why things one person finds funny or sad online may not always be seen in the same way by others. • I can recognise some ways in which the internet can be used to communicate. • I can identify ways that I can put information on the internet. • I can explain why lots of people sharing the same opinions or beliefs online do not make those opinions or beliefs true. • I can explain rules to keep myself safe when using technology both in and beyond the home. • I can identify rules that help keep us safe and healthy in and beyond the home when using technology. • I can give some simple examples of these rules. • I can recognise more detailed examples of information that is personal to someone (e.g where someone lives and goes to school, family names). • I can explain why it is important to always ask a trusted adult before sharing any personal information online, belonging to myself or others. • I understand that work created by others does not belong to me even if I save a copy. • I know that work I create belongs to me. • I can name my work so that others know it belongs to me. • I can talk about how to use the internet as a way of finding information online. • I can describe ways that some people can be unkind online. • I can offer examples of how this can make others feel. • I can give simple examples of how to find information using digital technologies, e.g. search engines, voice activated searching). • I know / understand that we can encounter a range of things online including things we like and don't like as well as things which are real or make believe / a joke.	

		• I know how to get help from a trusted adult if we see content that makes us feel sad, uncomfortable worried or frightened.	
Creating media – Digital painting	• Use technology purposefully to create, organise, store, manipulate and retrieve digital content	• Describe what different freehand tools do • Use the shape tool and the line tools • Make careful choices when painting a digital picture • Explain why I chose the tools I used • Use a computer on my own to paint a picture • Compare painting a picture on a computer and on paper	Create a picture using freehand tools Use shape and line tools when precision is needed Use a range of paint colours Use the fill tool to colour an enclosed area Use the undo button to correct a mistake Combine a range of tools to create a piece of artwork.
Creating media – Digital writing	• Use technology purposefully to create, organise, store, manipulate and retrieve digital content • Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies	• Use a computer to write • Add and remove text on a computer • Identify that the look of text can be changed on a computer • Make careful choices when changing text • Explain why I used the tools that I chose • Compare typing on a computer to writing on paper	Use letter, number and Space keys to enter text into a computer Use punctuation and special characters Use the Backspace key to remove text Position the text cursor in a chosen location Use undo Choose options to achieve a desired effect Select text Change the appearance of text on a computer.
Data and information – Grouping data	• Use technology purposefully to create, organise, store, manipulate and retrieve digital content • Recognise common uses of information technology beyond school	• Label objects • Identify that objects can be counted • Describe objects in different ways • Count objects with the same properties • Compare groups of objects • Answer questions about groups of objects	Collect simple data Show that collected data can be counted Describe the properties of an object Choose an attribute to group objects by Group objects to answer questions Explain that objects can be grouped by similarities (attribute) Describe a group of objects (based on commonality)
Programming A – Moving a robot	• Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions	• Explain what a given command will do • Act out a given word • Combine forwards and backwards commands to make a sequence	Choose a series of words that can be enacted as a program Choose a series of words that can be run as a program Run a program on a device.

	• Create and debug simple programs • Use logical reasoning to predict the behaviour of simple programs • Recognise common uses of information technology beyond school	• Combine four direction commands to make sequences • Plan a simple program • Find more than one solution to a problem	
Programming B – Introduction to animation	• Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions • Create and debug simple programs • Use logical reasoning to predict the behaviour of simple programs • Use technology purposefully to create, organise, store, manipulate and retrieve digital content • Recognise common uses of information technology beyond school • Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies	• Find more than one solution to a problem • Show that a series of commands can be joined together • Identify the effect of changing a value • Explain that each sprite has its own instructions • Design the parts of a project • Use my algorithm to create a program	Explain what a command given can do Match a command to an outcome Choose a command for a given purpose Understand that a program is a set of commands a computer can run Build a sequence of commands in steps. Choose a series of words that can be enacted as a program Choose a series of words that can be run as a program Run a program on a device.

Year 2	National Curriculum	Objectives (From NCCE)	Skills (Based on NCCE Learning Graphs)
Natterhub – Online Safety Learning programme.	• Pupils should be taught to use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	• 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. • I can explain how information put online about someone can last for a long time. • I can describe how anyone's online information could be seen by others.	

	• Pupils should be taught to use technology purposefully to create, organise, store, manipulate and retrieve digital content. • Pupils should be taught to recognise common uses of information technology beyond school.	• I can explain what bullying is, how people may bully others and how bullying can make someone feel. • I can explain why anyone who experiences bullying is not to blame. • I can talk about how anyone experiencing bullying can get help. • I can use simple keywords in search engines. • I can demonstrate how to navigate a simple webpage to get to information I need (e.g. home, forward, back buttons; links, tabs and sections). • I can explain the difference between things that are imaginary, 'made up' or 'make believe' and things that are 'true' or 'real'. • I can explain why some information I find online may not be real or true. • I can explain simple guidance for using technology in different environments and settings e.g. accessing online technologies in public places and the home environment. • I can say how those rules / guides can help anyone accessing online technologies. • I can explain how passwords can be used to protect information, accounts and devices. • I can explain and give examples of what is meant by 'private' and 'keeping things private'. • I can describe and explain some rules for keeping personal information private (e.g. creating and protecting passwords). • I can recognise that content on the internet may belong to other people. • I can describe why other people's work belongs to them.	
Creating media – Digital photography	• Use technology purposefully to create, organise, store, manipulate and retrieve digital content • Recognise common uses of information technology beyond school	• Use a digital device to take a photograph • Make choices when taking a photograph • Describe what makes a good photograph • Decide how photographs can be improved • Use tools to change an image • Recognise that photos can be changed	Capture a digital image Take photographs in both landscape and portrait frame View photographs on a digital device Decide which photographs to keep Use filters to edit the appearance of a photograph Hold the camera still to take a clear photograph Use zoom to change the composition of a photograph Consider lighting before taking a photograph

Creating media – Making Music	• Use technology purposefully to create, organise, store, manipulate and retrieve digital content	• Say how music can make us feel • Identify that there are patterns in music • Show how music is made from a series of notes • Show how music is made from a series of notes • Create music for a purpose • Review and refine our computer work	Recognise that information on a computer can be stored Explain that information on a computer can be saved Explain that stored information can be retrieved, edited and resaved/ Recognise that people around me can view my screen to see my work Recognise that my word can be printed or shared. Recognise that my work can be shared between devices.
Data and information – Pictograms	• Use technology purposefully to create, organise, store, manipulate and retrieve digital content • Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies	• Recognise that we can count and compare objects using tally charts • Recognise that objects can be represented as pictures • Create a pictogram • To select objects by attribute and make comparisons • Recognise that people can be described by attributes • Explain that we can present information using a computer	Show I can enter data onto a computer Recognise that people, animals and objects can be described by attributes. Show I can enter data onto a computer Use a computer to view data in different formats Use pictograms to answer single-attribute questions Use a computer to answer comparison questions (graphs, tables)
Programming A – Robot Algorithms	• Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions • Create and debug simple programs • Use logical reasoning to predict the behaviour of simple programs	• Describe a series of instructions as a sequence • Explain what happens when we change the order of instructions • Use logical reasoning to predict the outcome of a program (series of commands) • Explain that programming projects can have code and artwork • Design an algorithm	Choose a series of words that can be enacted as a sequence Choose a series of instructions that can be run as a program Create a program Trace a sequence to make a prediction Tun a program on a device Debug a program that I have written

		• Create and debug a program that I have written	
Programming B – Programming Quizzes	• Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions • Create and debug simple programs • Use logical reasoning to predict the behaviour of simple programs • Use technology purposefully to create, organise, store, manipulate and retrieve digital content	• Explain that a sequence of commands has a start • Explain that a sequence of commands has an outcome • Create a program using a given design • Change a given design • Create a program using my own design • Decide how my project can be improved	Choose a series of words that can be enacted as a sequence Explain what happens when we change the order of instructions Choose a series of commands that can be run as a program Trace a sequence to make a prediction Test a prediction by running the sequence Create and debug a program that I have written Run a program on a device

Year 3	**National Curriculum**	**Objectives (From NCCE)**	**Skills (Based on NCCE Learning Graphs)**
Natterhub – Online Safety Learning programme.	• Pupils should be taught to 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. • Pupils should be taught to use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. • Pupils should be taught to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	• I can explain what is meant by the term 'identity'. • I can explain how people can represent themselves in different ways online. • I can describe ways people who have similar likes and interests can get together online. • I can explain what it means to 'know someone' online and why this might be different from knowing someone offline. • I can explain what is meant by 'trusting someone online', why this is different from 'liking someone online', and why it is important to be careful about who to trust online including what information and content they are trusted with. • I can explain why someone may change their mind about trusting anyone with something if they feel nervous, uncomfortable or worried. • I can give examples of what anyone may or may not be willing to share about themselves online. I can explain the need to be careful before sharing anything personal. • I can explain who someone can ask if they are unsure about putting something online.	

		• I can describe appropriate ways to behave towards other people online and why this is important. • I can give examples of how bullying behaviour could appear online and how someone can get support. • I can demonstrate how to use key phrases in search engines to gather accurate information online. • I can explain how the internet can be used to sell and buy things. • I can explain the difference between a 'belief', an 'opinion' and a 'fact. and can give examples of how and where they might be shared online, e.g. in videos, memes, posts, news stories etc. • I can explain that not all opinions shared may be accepted as true or fair by others (e.g. monsters under the bed). • I can describe and demonstrate how we can get help from a trusted adult if we see content that makes us feel sad, uncomfortable worried or frightened. • I can explain why spending too much time using technology can sometimes have a negative impact on anyone, e.g. mood, sleep, body, relationships; I can give some examples of both positive and negative activities where it is easy to spend a lot of time engaging with devices. • I can give reasons why someone should only share information with people they choose to and can trust. I can explain that if they are not sure or feel pressured then they should tell a trusted adult. • I can explain why copying someone else's work from the internet without permission isn't fair and can explain what problems this might cause.	
Creating media – Stop Motion	• 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	• Explain that animation is a sequence of drawings or photographs • Relate animated movement with a sequence of images • Plan an animation • Identify the need to work consistently and carefully • Review and improve an animation • Evaluate the impact of adding other media to an animation	Plan an animation using a storyboard Set up the work area with an awareness of what will be captured Capture an image Use the onion skinning tool to review subject position Move a subject between captures. Review a captured sequence of frames as an animation Remove frames to improve an animation Add media to enhance an animation Review a completed project

Creating media – Desktop publishing	• 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	• Recognise how text and images convey information • Recognise that text and layout can be edited • Choose appropriate page settings • Add content to a desktop publishing publication • consider how different layouts can suit different purposes • Consider the benefits of desktop publishing	Show that page orientation can be changed Add text to a placeholder Organise text and image placeholders in a page layout Add and remove images to and from placeholders Edit text in a placeholder Move resize and rotate images Choose fonts and apply effects to text Review a document
Data and information – Branching databases	• 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	• Create questions with yes/no answers • Identify the object attributes needed to collect relevant data • Create a branching database • Explain why it is helpful for a database to be well structured • Identify objects using a branching database • Compare the information shown in a pictogram with a branching database	Retrieve information from different levels of the branching database Create questions with yes/no answers
Programming A – Sequencing sounds	• 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	• Explore a new programming environment • Identify that commands have an outcome • Explain that a program has a start • Recognise that a sequence of commands can have an order	Build a sequence of commands Combine commands in a program Order commands in a program Create a sequence of commands to produce a given outcome

	• Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs • 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	• Change the appearance of my project • Create a project from a task description	
Programming B – Events and Actions	• 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 • 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	• Explain how a sprite moves in an existing project • Create a program to move a sprite in four directions • Adapt a program to a new context • Develop my program by adding features • Identify and fix bugs in a program • Design and create a maze-based challenge	Build a sequence of commands Combine commands in a program Order commands in a program Create a sequence of commands to produce a given outcome

Year 4	National Curriculum	Objectives (From NCCE)	Skills (Based on NCCE Learning Graphs)
Natterhub – Online Safety Learning programme.	• Pupils should be taught to 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. • Pupils should be taught to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range	• I can explain how my online identity can be different to my offline identity. • I can describe positive ways for someone to interact with others online and understand how this will positively impact on how others perceive them. • I can describe strategies for safe and fun experiences in a range of online social environments (e.g. livestreaming, gaming platforms). • I can describe how to find out information about others by searching online. • I can describe ways people can be bullied through a range of media (e.g. image, video, text, chat).	

	of ways to report concerns about content and contact.	• I can explain why people need to think carefully about how content they post might affect others, their feelings and how it may affect how others feel about them (their reputation). • I can analyse information to make a judgement about probable accuracy and I understand why it is important to make my own decisions regarding content and that my decisions are respected by others. • I can describe how to search for information within a wide group of technologies and make a judgement about the probable accuracy (e.g. social media, image sites, video sites). • I can explain why lots of people sharing the same opinions or beliefs online do not make those opinions or beliefs true. • I can explain that technology can be designed to act like or impersonate living things (e.g. bots) and describe what the benefits and the risks might be. • I can explain simple guidance for using technology in different environments and settings e.g. accessing online technologies in public places and the home environment. • I can say how those rules / guides can help anyone accessing online technologies. • I can explain how using technology can be a distraction from other things, in both a positive and negative way. • I can describe strategies for keeping personal information private, depending on context. • I can describe how some online services may seek consent to store information about me; I know how to respond appropriately and who I can ask if I am not sure. • When searching on the internet for content to use, I can explain why I need to consider who owns it and whether I have the right to reuse it. • I can give some simple examples of content which I must not use without permission from the owner, e.g. videos, music, images.	
Creating media – Audio editing	• 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,	• Identify that sound can be digitally recorded • Use a digital device to record sound • Explain that a digital recording is stored as a file	Record sound using a computer Play recorded audio Import audio into a project Delete a section of audio Change the volume of tracks in a project

	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	• Explain that audio can be changed through editing • Show that different types of audio can be combined and played together • Evaluate editing choices made	
Creating media – Photo editing	• 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	• Explain that digital images can be changed • Change the composition of an image • Describe how images can be changed for different uses • Make good choices when selecting different tools • Recognise that not all images are real • Evaluate how changes can improve an image	Recognise that digital images can be manipulated Recognise that images can be changed for different purposes Use the most appropriate tool for a particular purpose Recognise that not all images are real Consider the impact of changes made on the quality of the image Change the composition of an image Apply a change globally Apply changes locally Make additions
Data and information – Data Logging	• Use sequence, selection, and repetition in programs; work with variables and various forms of input and output • 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	• Explain that data gathered over time can be used to answer questions • Use a digital device to collect data automatically • Explain that a data logger collects 'data points' from sensors over time • Use data collected over a long duration to find information • Identify the data needed to answer questions • Use collected data to answer questions	Use a digital device to collect data automatically Choose how often to automatically collect data samples Use a set of logged data to find information Use a computer program to sort data by one attribute Export information in different formats
Programming A – Repetition in shapes	• Design, write and debug programs that accomplish specific goals, including controlling or simulating	• Identify that accuracy in programming is important	List an everyday task as a set of instructions including repetition

	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 • 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	• Create a program in a text-based language • Explain what 'repeat' means • Modify a count-controlled loop • Produce a given outcome • Decompose a task into small steps • Create a program that uses count-controlled loops to produce a given outcome	Use an indefinite loop to produce a given outcome Use a count-controlled loop to produce a given outcome Plan a program that includes appropriate loops to produce a given outcome Recognise tools that enable more than one process to be run at the same time (concurrency) Create two or more sequences that run at the same time
Programming B – Repetition in games	• 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 • 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	• Develop the use of count-controlled loops in a different programming environment • Explain that in programming there are infinite loops and count controlled loops • Develop a design that includes two or more loops which run at the same time • Modify an infinite loop in a given program • Design a project that includes repetition • Create a project that includes repetition	List an everyday task as a set of instructions including repetition Use an indefinite loop to produce a given outcome Use a count-controlled loop to produce a given outcome Plan a program that includes appropriate loops to produce a given outcome Recognise tools that enable more than one process to be run at the same time (concurrency) Create two or more sequences that run at the same time

Year 5	**National Curriculum**	**Learning Objectives**	**Skills**

Natterhub – Online Safety Learning programme.	• Pupils should be taught to use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies. • Pupils should be taught to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	• If something happens that makes me feel sad, worried, uncomfortable or frightened I can give examples of when and how to speak to an adult I can trust and how they can help. • I can explain how other people may look and act differently online and offline. • 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 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. • I can search for information about an individual online and summarise the information found. • 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 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 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. • 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.	
Creating media – Video editing	• Understand computer networks, including the internet; how they can provide multiple services, such	• Explain what makes a video effective	Use different camera angles Use pan, tilt and zoom

	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	• Identify digital devices that can record video • Capture video using a range of techniques • Create a storyboard • Identify that video can be improved through reshooting and editing • Consider the impact of the choices made when making and sharing a video	Identify features of a video recording device or application Combine filming techniques for a given purpose Determine what scenes will convey your idea Decide what changes I will make when editing Choose to reshoot a scene or improve later through editing Use split, trim and crop to edit a video
Creating media – Vector Drawing	• 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	• Identify that drawing tools can be used to produce different outcomes • Create a vector drawing by combining shapes • Use tools to achieve a desired effect • Recognise that vector drawings consist of layers • Group objects to make them easier to work with • Evaluate my vector drawing	Add an object to a vector drawing Select one object or choices made multiple objects Delete objects Move objects between the layers of a drawing Group and ungroup selected objects Duplicate objects using copy and paste Modify objects Reposition objects Combine options to achieve a desired effect Create a vector drawing for a given purpose
Data and information –Flat-File Databases	• 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 • 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 a form to record information • Compare paper and computer-based databases • Outline how grouping and then sorting data allows us to answer questions • Explain that tools can be used to select specific data	Navigate a flat-file database Design a structure for a flat-file database Choose different ways to view data Ask questions that need more than one attribute to answer Choose which attribute to sort data by to answer a given question Choose which attribute and value to search by to answer a given question (operands) Choose multiple criteria to search data to answer a given question (AND and OR)

		• Explain that computer programs can be used to compare data visually • Apply my knowledge of a database to ask and answer real-world questions	Select an appropriate graph to visually compare data Choose suitable ways to present information to other people
Programming A – Selection in physical computing	• 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 (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	• Control a simple circuit connected to a computer • Write a program that includes count-controlled loops • Explain that a loop can stop when a condition is met • Explain that a loop can be used to repeatedly check whether a condition has been met • Design a physical project that includes selection • Create a program that controls a physical computing project	Create a condition-controlled loop Use a condition in an 'if...then…' statement to start an action Use selection to switch the program flow in one of two ways Use a condition in an 'if...then...else…' statement to produce given outcomes
Programming B – Selection	• 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 (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals,	• Explain how selection is used in computer programs • Relate that a conditional statement connects a condition to an outcome • Explain how selection directs the flow of a program • Design a program which uses selection • Create a program which uses selection • Evaluate my program	Experiment with a repeat-until loop Use a condition in an 'if... then…' statement to produce a given outcome Show that a condition can switch program flow in one of two ways Use a condition in an 'if... then... else...' statement to produce given outcomes

	including collecting, analysing, evaluating and presenting data and information		

Year 6	National Curriculum	Objectives (From NCCE)	Skills (Based on NCCE Learning Graphs)
Natterhub Lesson – Online Safety Learning programme.	• Pupils should be taught to 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. • Pupils should be taught to use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. • Pupils should be taught to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	• 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. • 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. • 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. • I can explain how search engines work and how results are selected and ranked. • I can explain how to use search technologies effectively. • I understand the concept of persuasive design and how it can be used to influences peoples' choices. • 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 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 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.

Creating media – Webpage creation	• 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 • 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	• Review an existing website and consider its structure • Plan the features of a web page • Consider the ownership and use of images (copyright) • Recognise the need to preview pages • Outline the need for a navigation path • Recognise the implications of linking to content owned by other people	Review an existing website (navigation bars, header) Create a new blank web page Add text to a web page Set the style of text on a web page Embed media in a web page Change the appearance of text Add web pages to a website Insert hyperlinks to another site Insert hyperlinks between pages Preview a web page (different screen sizes)
Creating media – 3D modelling	• 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	• Use a computer to create and manipulate three-dimensional (3D) digital objects • Compare working digitally with 2D and 3D graphics • Construct a digital 3D model of a physical object • Identify that physical objects can be broken down into a collection of 3D shapes • Design a digital model by combining 3D objects • Develop and improve a digital 3D model	Create 3D graphical objects on a computer screen Alter the view of the 3D space Place a 3D object in a 3D space Select an object Delete an object Duplicate an object Reposition objects in three dimensions Rotate objects in three dimensions Resize an object in three dimensions Recolour an object Use an object as a placeholder Select multiple objects Group objects Modify multiple objects Recognise that blank objects must be used as placeholders to create holes Recognise the role of scale in design
Data and information –Introduction to Spreadsheets	• 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,	• Identify questions which can be answered using data • Explain that objects can be described using data	Calculate data using a formula for each operation Use functions to create new data Use existing cells within a formula

	including collecting, analysing, evaluating and presenting data and information	• Explain that formulas can be used to produce calculated data • Apply formulas to data, including duplicating • Create a spreadsheet to plan an event • Choose suitable ways to present data	Choose suitable ways to present spreadsheet data
Programming A – Variables in games	• 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 (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	• Define a 'variable' as something that is changeable • Explain why a variable is used in a program • Choose how to improve a game by using variables • Design a project that builds on a given example • Use my design to create a project • Evaluate my project	Identify a variable in an existing program Experiment with the value of an existing variable Choose a name that identifies the role of a variable to make it easier for humans to understand it Decide where in a program to set a variable Update a variable with a user input Use an event in a program to update a variable Use a variable in a conditional statement to control the flow of a program Use the same variable in more than one location in a program
Programming B – Sensing	• 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	• Create a program to run on a controllable device • Explain that selection can control the flow of a program • Update a variable with a user input	Identify a variable in an existing program Experiment with the value of an existing variable Choose a name that identifies the role of a variable to make it more usable (to humans) Decide where in a program to set a variable Update a variable with a user input

	• 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 (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 an conditional statement to compare a variable to a value • Design a project that uses inputs and outputs on a controllable device • Develop a program to use inputs and outputs on a controllable device	Use an event in a program to update a variable Use a variable in a conditional statement to control the flow of a program Use the same variable in more than one location in a program