Computing

Knowledge Building
Digital Citizenship
Digital Citizenship (which encompasses e-safety) is considered the ability to access digital technology safely and responsibly, as well as being an active, respectful, discerning member of society both online and offline. Pupils will learn to identify situations that make them feel uncomfortable and understand how to resolve these. They will also learn that digital citizenship relates to their own behaviour online, as well as that of others. They will know that they must report anything they see or hear that they don't like to an adult and begin to monitor their **online behaviours** to ensure their own safety. As ethical digital citizens, they will analyse the validity of online content, understand the importance of copyright, and respectfully evaluate and challenge online content.
Computer Science
The core of computing is **Computer Science**, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. In simple terms, pupils will know that inputting simple instructions into a controllable device is a form of computer science. The progression of knowledge in this area will come through developing computational language and thinking, understanding what **algorithms** are and how they can be used to write code to **program** a device using increasingly complex steps.
Data
Data is a term used to cover collective information that can be presented in several ways. Pupils will have had experience of handling data in mathematics and will have opportunities to cross-reference these skills with computer programs that can be used to sort and present data. By using computer data programs, large amounts of data can be processed and presented easily. Pupils will have experience of using **databases and spreadsheet programs.**
Information Technology
Information Technology provides a context for the use of computers in society - historically, currently and in the future. Through real-life contexts, pupils will link what are often abstract ideas involving technology to everyday life, and therefore understand the practical applications of computing in the wider world. This will show them how computing is integral to the world around them, enabling them to identify and understand the uses of technology in daily life. This includes computer networks; the internet and the World Wide Web; radio and satellites; search technologies and how they work.
Technical Vocabulary
Learning about computing brings a significant amount of domain-specific **technical vocabulary.** Vocabulary in computing also changes regularly as processes, programs and applications adapt and develop. Pupils will explore an ever-increasingly complex dictionary of **technical terms and vocabulary** and will be encouraged to implement them when using computers and devices in all curriculum areas.
Multimedia
Multimedia is a term used to cover a range of media devices and applications. Multimedia includes the use and combination of video, audio, graphics and text to interact and communicate with an audience. Pupils will have the opportunity to design and produce **digital content** of their own, using a range of media and consider the audience they are creating it for. Many pupils will be familiar with creating content and be increasingly aware of how the work of others can be accessed online.

Computing

ADVENTURERS YEAR 3&4

Knowledge Building					
Digital Citizenship	**Computer Science**	**Data**	**Information Technology**	**Technical Vocabulary**	**Multimedia**
Know that not everything online is true and take care when communicating and sharing information	Know how to use repetition, loops and selection and how to decompose problems to create solutions	Know how to use technology, such as data loggers, to collect information and draw conclusions	Know how networks and the internet work, the history of the WWW and the opportunities for communication online	Know and understand the terms 'network', 'input', 'output', 'World Wide Web', 'PageRank' and 'Sprite'	Know how to use a range of tools to combine, edit and enhance a range of media for a particular purpose or effect

Skills Progression				
Computing / ICT Skills Adventurers 1 and 2 / Year 3 and 4				
Digital Citizenship	**Computer Science**	**Data**	**Information Technology**	**Multimedia**
DC4 Verify the accuracy and reliability of the information found, distinguishing between fact and opinion DC5 Use ICT to exchange ideas and collaborate with others remotely DC6 Use ICT safely and appreciate the need to keep electronic data secure	CS4 Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems CS5 Solve problems by decomposing them into smaller parts CS6 Use sequence, selection, and repetition in programs CS7 Work with variables and various forms of input and output CS8 Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	D3 Identify how ICT can be used to collect and structure information so that it can be searched and analysed D4 Capture, record and analyse data using sensors in order to support observations and investigations	IT4 Save and use stored information to follow lines of enquiry IT5 Identify the opportunities computer networks offer for communication and collaboration IT6 Use key words to search for and select appropriate information from the internet and other digital sources IT7 Understand computer networks including the Internet, recognizing how they can provide multiple services, such as the world-wide web	Mm6 Explore alternative approaches to develop and refine work Mm7 Use a variety of ICT tools to create, refine and present work in a variety of ways Mm8 Use features of layout, presentation and organisation in print and on screen Mm9 Use editing skills for visual effects

Computing

Knowledge Progression	
Adventurers 1 / Year 3	**Adventurers 2 / Year 4**
Come Fly With Me! Africa **MULTIMEDIA (PUBLISHING)** Pupils will learn basic publishing skills in order to create an eye-catching poster about an aspect of African life of their choosing. Firstly, they will analyse examples of posters, identifying common features and like and dislikes in terms of layout, typography etc. Pupils will develop their word processing and publishing skills and carry out some additional research on a chosen aspect of African life or culture. Finally, pupils will use the research and apply the skills learnt to create their posters. **Concepts** **NC –** Know how to 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 **NC –** Understand how to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact • To know how to use publishing software to create an eye-catching information poster	**Picture Our Planet** **MULTIMEDIA (PHOTO EDITING)** Pupils will understand why photos may be edited in the wider world, pupils will use photo editing software to use more advanced tools, blending modes, adjustments, and filters for editing photos and evaluating the effect they have on the photo. **Concepts** **NC –** 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 • Understand how to edit photos using advanced tools and filters **INFORMATION TECHNOLOGY (EMAIL)** pupils will find out about email and consider why people use it and its advantages of it. They will also need to consider whether there are any disadvantages. Computing, ties in with Part Two, Scotland. Pupils will send an email to a wildlife photographer and nature tour leader. **Concepts** **NC -** 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 **NC –** Know how to use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concerns about content and contact. • To understand email and be able to draft and send them
"That's All, Folks!" **MULTIMEDIA (ANIMATION)** Pupils will understand about the concept of animation - from the definition to techniques - to help them link what they see on television and in the media to the practices used to create them. Pupils will also learn about the history of animation, understand the different types of animation and create their own for others to watch. **Concepts** **NC –** Know how to 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 • To know what animation is • To understand the history of animation	**A World of Difference** **MULTIMEDIA (PRESENTATION)** Pupils will become quizmasters. They will critically evaluate a PowerPoint quiz template and analyse the animations and design. Pupils will have the opportunity to develop their skills in using a presentation program such as PowerPoint. They will produce their own quiz of 10 questions by recreating or adapting the template – learning how to change colour schemes, backgrounds etc. and add effects as appropriate. **Concepts** **NC –** Know how to 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 **NC –** Know how to use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content

Computing

- To know some famous animations and how they are made
- To know the different methods of animation
- To understand how to create a stop motion animation

- To know how to create a quiz using a presentation program

Under the Canopy

DATA

Pupils will make use of data loggers to complete a temperature-based investigation, measuring temperature over time. Firstly, pupils will learn about the use of data loggers in the wider world, before using data loggers to investigate temperature over time. They will then use computer software to create charts and graphs and draw conclusions from them.

Concepts

NC – Know how to 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

- To know how to record and analyse data using data logging devices

Law and Order

COMPUTER SCIENCE

Pupils are introduced to the programming environment of Kodu. They create a 3D world and a game within it, focusing on rules and order within their game. Using a mixture of unplugged lessons and Kodu itself, pupils will explore the concept of selection in programming. They will use this knowledge to program elements of their game and apply their knowledge to create their own individual features.

Concepts

NC – Know how to use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs

NC – Know how to design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts

- To know how to create a 3D world within Kodu
- To know how to Identify selection
- To understand and use selection with Kodu

Athens v Sparta

DIGITAL CITIZENSHIP

Pupils will look at E-safety from the perspective of malware (malicious software) and more specifically Trojan Horse computer programs. Pupils will look at what Trojan Horse programs can do, how they can protect their computers from them and the links between computing Trojan Horses and THE Trojan Horse.

Concepts

NC – Know how to use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concerns about content and contact.

- To understand the Trojan Horse and its history

COMPUTER SCIENCE

This begins by watching and listening to Zorba's Dance and learning a dance similar to this by viewing it as an algorithm. Pupils will learn how to use flowcharts to represent algorithms. Pupils then use Scratch to explore a range of inputs that can be used, and when modelling the use of inputs within programming, a written frame of 'When..... then.....' is used to introduce the concept of selection within algorithms. Finally, pupils design and program a Scratch game using repetition and selection.

NC – Know how to use sequence, selection, and repetition in programs, work with variables and various forms of input and output

- To understand and use repetition within algorithms
- To understand the use of different inputs and begin to understand selection in programming
- To understand and use inputs, repetition and selection in programming

Lightning Speed

COMPUTER NETWORKS

Pupils will learn about networks within computing and the World Wide Web. They will explore the concept of Local Area Networks (LAN) that link computers, printers, laptops and servers to one another. They will find out about the work of Tim Berners-Lee and how the Internet differs from the World Wide Web. Pupils will explore the links between servers globally and that email is sent using a wide range of servers and connections.

Concepts

NC - 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

A. To understand that the computers in a school are connected together in a network
B. To understand why computers are networked
C. To understand the difference between the internet and the World Wide Web (WWW)
D. To understand that servers on the internet are located across the planet
E. To understand how email is sent across the internet

Computing

Key Vocabulary	
Adventurers 1 / Year 3	**Adventurers 2 / Year 4**
Come Fly With Me! Africa	**Picture Our Planet**
research collate present publishing software present typography layout colour scheme tools	photo photo editing tools blending modes adjustments filters effects sliders RGB email email address connection advantage disadvantage .com .co.uk domain
"That's All, Folks!"	**A World of Difference**
animation animate stop-motion cartoon video frame	PowerPoint tools transitions colour scheme background hyperlink quiz digital content audience

Computing

frames per second (fps)	template
armature	design
photograph	animation
record	slides
storyboard	effects

Under the Canopy		Law and Order	
data	monitor	algorithm	tab
data logging	temperature	flowchart	debug
data logger		coding	Kodu
software		instructions	Programming
input		order	environment
output		start	logical reasoning
device		stop	abstraction
investigate		selection	
sensor		repetition	
plot chart		loop	
graph		events	
line graph		command	

Athens v Sparta		Lightning Speed	
Trojan Horse	algorithm	local area network	data transfer
malware	flowchart	LAN	client
malicious software	Scratch	server	browser
virus	block-based	connected	webpage
invade	repetition	network	email
personal data confidential	input	wireless	collaboration
safety	output	main hub	
Zorba	when	devices	
dance	then	workstation	
instructions		printer	
steps		Internet	
		World Wide Web	

Computing

Safe Zone Skills Progression (Education for a Connected World)			
Adventurers 1 / Year 3		**Adventurers 2 / Year 4**	
Self-Image and Identity	**Online Relationships**	**Self-Image and Identity**	**Online Relationships**
I can explain what is meant by the term 'identity'. I can explain how people can represent themselves in different ways online. I can explain ways in which someone might change their identity depending on what they are doing online (e.g. gaming; using an **avatar**; social media) and why.	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 explain how someone's feelings can be hurt by what is said or written online. I can explain the importance of giving and gaining permission before sharing things online; how the principles of sharing online is the same as sharing offline e.g. sharing images and videos.	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 explain that others online can pretend to be someone else, including my friends, and can suggest reasons why they might do this.	I can describe strategies for safe and fun experiences in a range of online social environments (e.g. **livestreaming**, gaming platforms). I can give examples of how to be respectful to others online and describe how to recognise healthy and unhealthy online behaviours. I can explain how content shared online may feel unimportant to one person but may be important to other people's thoughts feelings and beliefs.
Online Reputation	**Online Bullying**	**Online Reputation**	**Online Bullying**
I can explain how to search for information about others online. 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 describe how to find out information about others by searching online. I can explain ways that some of the information about anyone online could have been created, copied or shared by others.	I can recognise when someone is upset, hurt or angry online. I can describe ways people can be bullied through a range of media (e.g. image, video, text, **chat**). 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).
Managing Online Information	**Health, Well-Being and Lifestyle**	**Managing Online Information**	**Health, Well-Being and Lifestyle**

Computing

I can demonstrate how to use key phrases in search engines to gather accurate information online. I can explain what **autocomplete** is and how to choose the best suggestion. 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 engaged (e.g. doing homework, games, films, videos). I can explain why some online activities have age restrictions, why it is important to follow them and know who I can talk to if others pressure me to watch or do something online that makes me feel uncomfortable (e.g. age restricted gaming or web sites).	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 describe some of the methods used to encourage people to buy things online (e.g. advertising offers; **in-app purchases**, **pop-ups**) and can recognise some of these when they appear online. 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 what is meant by **fake news** e.g. why some people will create stories or alter photographs and put them online to pretend something is true when it isn't.	I can explain how using technology can be a distraction from other things, in both a positive and negative way. I can identify times or situations when someone may need to limit the amount of time they use technology e.g. I can suggest strategies to help with limiting this time.
Privacy and Security	**Copyright and Ownership**	**Privacy and Security**	**Copyright and Ownership**
I can describe simple strategies for creating and keeping passwords private. 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 describe how connected devices can collect and share anyone's information with others. I can describe how connected devices can collect and share anyone's information with others.	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.	I can describe strategies for keeping personal information private, depending on context. I can explain that internet use is never fully private and is monitored, e.g. adult supervision. 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. I know what the **digital age of consent** is and the impact this has on online services asking for consent.	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.

Computing

Safe Zone Knowledge Progression (Education for a Connected World)	
Adventurers 1 / Year 3	**Adventurers 2 / Year 4**
Lesson 1 – Self-Image and Identity **Mission:** **To create a new identity card to access the Safe Zone and to create an avatar for online presence** This is the first lesson of the Year 3 Safe Zone where pupils are introduced to the Safe Zone and become Cadets for the year. In this lesson, pupils learn about online identity and why is important to keep their identity safe online. To protect their identity online, pupils create their own avatars and fill in identity passes. **Key Vocabulary** identity, avatar, safety, security, presence, breach, represent, change	**Lesson 1 – Online Relationships & Online Bullying** **Mission:** **To understand downtime and how we should behave during it** This is the first lesson of the Year 4 Safe Zone where pupils take on the role of Lieutenant for the year. In this lesson, pupils look at their 'downtime'. They discuss online activities they like to do in their spare time, the difficulties they could face, and how they should conduct themselves. **Key Vocabulary** downtime, hobbies, precautions, strangers, live-stream, friend request, add, connection
Lesson 2 – Online Relationships & Online Bullying **Mission:** **Part 1 - To create or update an online forum linked to the school website that shares class news and pupils' interests** **Part 2 - To understand cyber-bullying and offer advice on how to deal with it** This lesson is split into two parts but could also be an ongoing task that can be regularly revisited. Pupils will need some teaching around how to use any online space chosen by individual schools. They will learn about how we should conduct ourselves when communicating online and create a class charter to work towards. Pupils will also discuss cyber-bullying and discuss how to deal with this. **Key Vocabulary** communication, online, website, platform, chat, post, comment, bullying, advice, conversation	**Lesson 2 – Health, Well-Being and Lifestyle** **Mission:** **To reflect on screen time and what you access online** In this lesson, pupils look at the distraction technology can be, from both a positive and negative viewpoint. Pupils will learn about the daily recommended screen time limits and discuss whether they think this is suitable. They will discuss different scenarios around technology as a distraction and decide whether their use is healthy by filling in a Personal Technology Audit. **Key Vocabulary** distraction, focus, concentration, engrossed, limit, screen time, technology, audit
Lesson 3 – Online Reputation & Managing Online Information **Mission:** **To ensure personal information shared online is limited and navigate using a search engine with precision and skill in order to gain relevant information quickly** In this lesson, pupils will review their digital footprint to understand what they share online (or what others have shared about them). They then learn about the validity of information on the internet, by being sent the ruse of a fake website. Pupils will learn the acronym CHASERS to guide them with safe internet searching. **Key Vocabulary** digital footprint, share, consent, reputation, validity, trust, accuracy, belief, fact, opinion, CHASERS	**Lesson 3 – Online Reputation & Managing Online Information** **Mission:** **To question the validity of online sources of information** In this lesson, pupils will extend their knowledge of safe searching of the internet by being shown another fake website. This time, they use the Knowledge CHASERS acronym from Year 3 to see if they can check the validity of the information for themselves. They will begin to understand the terms 'fake news' and 'misinformation' and the reasons people might post these. **Key Vocabulary** fake news, misinformation, fictional, factual, discerning, accuracy, impersonate, informal, formal

Computing

Lesson 4 – Health, Well-Being and Lifestyle **Mission:** **To complete a reflective assessment of your current computing usage and activity** In this lesson, pupils will review their usage of digital devices and set targets for the future. Pupils will complete 'Health and Well-Being assessments' by answering questions about their usage of digital devices. This lesson should enable pupils to be more aware of how they spend their time online. **Key Vocabulary** screen time, usage, blue light, impact, restrictions, emotions, rage quit, audit, questionnaire	**Lesson 4 – Self-Image and Identity** **Mission:** **To review online identity** In this lesson, pupils will explore the difference between online and offline identities. They will look at sample social media accounts and evaluate whether the example accounts are behaving correctly or not. They will begin to understand the term impersonation and explore the reasons behind why this happens. **Key Vocabulary** violation, protocol, identity, impersonation, pretend, public, social media, implications
Lesson 5 – Privacy and Security **Mission:** **To understand the practice of creating passwords for online files and identifying and generating good passwords** In this lesson, pupils develop their knowledge of passwords and why they are important. Pupils will be able to identify what makes a good password and they will learn to create passwords of their own. They will understand good practice in terms of passwords e.g. changing them regularly and not sharing them with others. **Key Vocabulary** password, strong, special character, thumbprint, retina, face / voice recognition, share, secure	**Lesson 5 – Copyright and Ownership** **Mission:** **To create an online portfolio being aware of copyright and ownership** In this lesson, pupils will build upon their knowledge of copyright and ownership and use this to create an online portfolio application for the role of Captain of the Safe Zone. Pupils will use the internet safely with discernment to find images they are able to reuse, showing awareness of copyright licenses. **Key Vocabulary** portfolio, application, reuse, digital content, sources, Google Sites, Microsoft Sway, information, publish, privacy settings
Lesson 6 – Copyright and Ownership **Mission:** **To understand that work can be easily copied online and to consider the information I share** In this final lesson in Year 3, pupils progress from Cadets to Lieutenants. Pupils will learn that work can be easily copied online, but that it is not always right to do so. They should learn when it is okay to share content created by others and develop their knowledge of copyright and ownership by finding free-to-use images that they can use in their work. **Key Vocabulary** copy, ownership, free to use, license, copyright, purchase, infringement, legal action	**Lesson 6 – Privacy and Security** **Mission:** **Begin to develop a knowledge of privacy and consent** In this lesson, pupils will receive the news of their promotion from Lieutenant to Captain. They will explore the concept of consent, terms and conditions and the digital age of consent. Pupils will start to understand the types of information requested by companies during sign-up processes, why they ask for this, and how they use it. They will understand why certain apps have age limits, and why they should be wary of trying to access things above their age range. **Key Vocabulary** consent, terms and conditions, share, permission, digital age of consent, request, advertising, monetise, information, data, monitor, precautions, age-appropriate

Computing

NAVIGATORS YEAR 5&6

Knowledge Building					
Digital Citizenship	**Computer Science**	**Data**	**Information Technology**	**Technical Vocabulary**	**Multimedia**
Know how to be a discerning digital citizen, questioning the validity of content and challenging improper representations	Know how to recognise, create and combine variables	Know what a spreadsheet is, what it is used for and how to create one	Understand how to use search engines, how results are selected and ranked, and know about satellite technologies	Know and understand the terms 'block', 'command', 'simulation', 'script' and 'variables'	Know how to identify hardware / software needed to fulfil a specific task & create new content using existing media

Skills Progression				
Computing / ICT Skills Navigators 1 / Y5 and Navigators 2 / Y6				
Digital Citizenship	**Computer Science**	**Data**	**Information Technology**	**Multimedia**
DC7 Verify the accuracy and reliability of the information found online, detect bias and distinguish evidence from opinion DC8 Identify a range of ways to report concerns and inappropriate behaviour DC9 Use ICT safely, respectfully and responsibly, managing risk and showing awareness of other users	CS4 Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems CS5 Solve problems by decomposing them into smaller parts CS6 Use sequence, selection, and repetition in programs CS7 Work with variables and various forms of input and output CS8 Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	D5 Use ICT to explore and develop simple models by changing variables and simple formulae D6 Answer questions by using ICT to identify, collect, store, analyse and present information D7 Represent data from analysis in appropriate ways, including the use of graphs	IT8 Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	Mm10 Analyse, describe and discuss the effectiveness of the work with ICT Mm11 Use a variety of ICT tools to create, develop and refine presentations and performances, integrating effect to enhance outcomes Mm12 Select, use and combine a variety of software (including internet services) on a range of digital devices to accomplish given goals, including collecting, analysing, evaluating and presenting data and information Mm13 Organise and adjust communication according to the needs of the audience and the technology, including taking account of the quality and content of the communication Mm14 Use a variety of ICT tools to create, refine and present work in a variety of digital and printed formats using appropriate forms and conventions.

Computing

Knowledge Progression

Navigators 1 / Year 5

Mission Control

MULTIMEDIA (VECTOR ARTWORK)

Pupils will learn about vector drawings and how they are created. They will understand the differences between traditional drawing, digital raster graphics and vector graphics. Finally, they will develop the skills needed to be able to create their own vector artwork, based on the theme of space exploration, using vector artwork software such as Vectr (https://vectr.com).

Concepts

NC – Know how to 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

- To understand and know how to create vector artwork

INFORMATION TECHNOLOGY

Pupils will learn how to use search technologies effectively, learning about search engines and search operators. This is not a standalone lesson but linked to one of the History lessons in the theme.

Concepts

NC – Know how to use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content

- To know how to use search technologies effectively

Full of Beans

MULTIMEDIA (VIDEO EDITING)

Pupils will use video editing software, such as iMovie or Windows Movie Maker, to create a short movie showing the importance of saving energy (local, national, international / global impact). Pupils will learn about camera angles and how they can be used to create different effects. Pupils will learn a variety of skills using digital devices such as recording video and sound, importing media, editing media within the software, adding transitions, adding audio, adding text / titles, and creating visual effects. They will then write scripts or storyboards, and use the skills learnt and apply them to the chosen video editing software to create their final video.

Concepts

NC – Know how to 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

- To know how to use video editing software to create a short movie clip

You're Not Invited

MULTIMEDIA (CAD – Computer Aided Design)

Pupils will research and analyse different Roman villa designs then sketch and annotate their own. Following this, pupils will be introduced to the chosen digital paint or CAD (Computer-Aided Design) software, build the necessary skills, and use these to design and create a 2D floorplan or 3D CAD Roman villa digitally.

Concepts

NC - To 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

Navigators 2 / Year 6

A World of Bright Ideas

COMPUTER SCIENCE

Computing in this unit follows a series of activities in which pupils refine and develop their skills in the Scratch coding program. Pupils will begin by playing and then analysing maths games that are already accessible online. They will consider how they work in terms of coding. They will then revisit how to use variables, inputs and repetition commands. Pupils will then subsequently design, make and program their own numeracy game (including a scoring system) using variables, selection and repetition. Pupils will have the opportunity to peer assess their games at the end of the series.

Concepts

NC – Know how to design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts

NC – Know how to use sequence, selection, and repetition in programs, work with variables and various forms of input and output

NC – Know how to use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs

- To know how to use variables and inputs within Scratch
- To understand how to use repetition and variables to create a scoring system
- To know how to design a numeracy game to include variables, selection and repetition
- To know how to program the designed game using variables, selection and repetition

Global Warning

MULTIMEDIA (PRESENTATION, WORD PROCESSING AND PUBLISHING)

There are two computing tasks in this unit. One of the tasks is related to the board game design technology task, where pupils will show their knowledge and skills in using presentation programs to produce the presentation for their board game.

Secondly, pupils will use a word processing package to produce a newspaper report. Then, they should use a range of ICT programs to present these texts, making informed choices about which electronic tools to use for different purposes i.e. using columns, adding images, etc.

Concepts

NC – Know how to 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

- To know how to use presentation software to create a digital presentation
- To know how to use word processing software to create a newspaper report

Wars of the World

MULTIMEDIA (PUBLISHING / DESIGN)

Pupils will use and apply the multimedia skills they have developed throughout Pathfinders and Adventurers to create a #childrennotsoldiers poster, combining and using a variety of software to achieve this. Pupils will already have had several opportunities to make posters. However, they will now need to employ knowledge and skills of a simple design or word processing program to produce a poster with a clear message. Pupils should use a variety of design software to achieve their result.

Concepts

Computing

NC - To use technology safely, respectfully and responsibly; recognise acceptable / unacceptable behaviour; identify a range of ways to report concerns about content and contact • To understand and know how to use CAD (Computer-Aided Design)	**NC –** Know how to 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 • To know how to use design software to create a poster.
Come Fly With Me! America	**'I Have a Dream…'**
DATA pupils will learn key features of spreadsheets such as cells, functions and formulae, and using the information gathered from the Maths Pupil-Led Activity, create graphs and bar charts etc. Following this, pupils will develop their skills further by researching and budgeting for a visit to an American theme park. **Concepts** **NC -** To 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 • To know how to use spreadsheet software to collect, store, analyse and represent data	**MULTIMEDIA (SOUND RECORDING)** Pupils will assimilate and apply a range of skills in using recording and presenting software. They will look at how sound, visuals and narration can work together to produce an effective and engaging speech. Whilst producing their broadcast, pupils will need to consider who they would like to show it to, and why they have chosen that person or group of people. **Concepts** **NC -** To 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 • To know how to create a multimedia broadcast **COMPUTER SCIENCE** Pupils will use Scratch to create a simulation of a lighting and audio system for the multimedia broadcast created above. Pupils will first create a backdrop, then audio control simulation and lighting rig which they will program so that it has different lighting patterns and finally adding their audio from their broadcast above. **Concepts** **NC –** Know how to design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • To know how to simulate the control within an audio system using selection, repetition and variables • To know how to simulate a system using costumes • To know how to use variables to extend a lighting pattern

Computing

Key Vocabulary	
Navigators 1 / Year 5	**Navigators 2 / Year 6**
Mission Control	**A World of Bright Ideas**
vector raster graphics traditional design artwork digital point pixels resolution grid layer blur shadow online platform web page collaboration share search search engine discerning evaluating operators	review assess feedback evaluate input variable command decomposition programming selection repetition loops event condition interact design develop game debug
Full of Beans	**Global Warning**
Windows Movie Maker iMovie movie sound visuals scene playback camera angles effect atmosphere editing transitions audio cut trim split text titles visual effects	presentation slide transitions animation sound timing narration effects background hyperlink embed slide design word processing typing editing spellchecker columns heading font format layout photo editing
You're Not Invited	**Wars of the World**
floorplan sketch design bird's-eye view 2D 3D Program software CAD Computer-Aided graphic design plane horizontal vertical rotate	poster design social media hashtag manipulate copy paste word processing layout edit editing vector photo

Computing

Come Fly With Me! America	'I Have a Dream…'	
data handling	broadcast	speech
presentation	Audacity	audience
bar chart	soundtrack	Scratch
graph	sound fx	lighting
photo album	Garageband	physical system
enhancements	audio recording	simulation
formula	narration	backdrop
sum	script	control
difference	sound	volume
cell	audio	costume
	visual	sprite
	engaging	

Computing

Safe Zone Skills Progression (Education for a Connected World)			
Navigators 1 / Year 5		**Navigators 2 / Year 6**	
Self-Image and Identity	**Online Relationships**	**Self-Image and Identity**	**Online Relationships**
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 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.	I can identify and critically evaluate online content relating to gender, race, religion, disability, culture and other groups, and explain why it is important to challenge and reject inappropriate representations online. I can describe issues online that could make anyone feel sad, worried, uncomfortable, or frightened. I know and can give examples of how to get help, both on and offline. I can explain the importance of asking until I get the help needed.	I can explain how sharing something online may have an impact either positively or negatively. I can describe how to be kind and show respect for others online including the importance of respecting boundaries regarding what is shared about them online and how to support them if others do not. I can describe how things shared privately online can have unintended consequences for others. e.g. **screen-grabs**. I can explain that taking or sharing inappropriate images of someone (e.g. embarrassing images), even if they say it is okay, may have an impact for the sharer and others; and who can help if someone is worried about this.
Online Reputation	**Online Bullying**	**Online Reputation**	**Online Bullying**
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.	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).	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.
Managing Online Information	**Health, Well-Being and Lifestyle**	**Managing Online Information**	**Health, Well-Being and Lifestyle**

Computing

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 aim 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.	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**, **loot boxes**) and explain the importance of seeking permission from a trusted adult before purchasing.	I can explain how search engines work and how results are selected and ranked. I can explain how to use search technologies effectively. I can describe how some online information can be opinion and can offer examples. I can explain how and why some people may present 'opinions' as 'facts'; why the popularity of an opinion or the personalities of those promoting it does not necessarily make it true, fair or perhaps even legal. I can define the terms 'influence', 'manipulation' and 'persuasion' and explain how someone might encounter these online (e.g. advertising and '**ad targeting**' and targeting for **fake news**). I understand the concept of **persuasive design** and how it can be used to influences peoples' choices. I can demonstrate how to analyse and evaluate the validity of 'facts' and information and I can explain why using these strategies are important. I can explain how companies and news providers target people with online news stories they are more likely to engage with and how to recognise this. I can describe the difference between on- line **misinformation** and **dis-information**. I can explain why information that is on a large number of sites may still be inaccurate or untrue. I can assess how this might happen (e.g. the sharing of misinformation or disinformation). I can identify, flag and report inappropriate content.	I can describe common systems that regulate age-related content (e.g. **PEGI**, **BBFC**, parental warnings) and describe their purpose. I recognise and can discuss the pressures that technology can place on someone and how / when they could manage this. I can recognise features of **persuasive design** and how they are used to keep users engaged (current and future use). I can assess and action different strategies to limit the impact of technology on health (e.g. **night-shift mode**, regular breaks, correct posture, sleep, diet and exercise).
Privacy and Security	**Copyright and Ownership**	**Privacy and Security**	**Copyright and Ownership**
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.	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.	I can describe effective ways people can manage passwords (e.g. storing them securely or saving them in the browser). I can explain what to do if a password is shared, lost or stolen. I can describe how and why people should keep their software and apps up to date, e.g. auto updates. I can describe simple ways to increase privacy on apps and services that provide privacy settings. I can describe ways in which some online content targets people to gain money or information illegally; I can describe strategies to help me identify such content (e.g. **scams**, **phishing**). I know that online services have **terms and conditions** that govern their use.	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.

Computing

Safe Zone Knowledge Progression (Education for a Connected World)	
Navigators 1 / Year 5	**Navigators 2 / Year 6**
Lesson 1 – Privacy and Security **Mission:** **To understand the practice of changing passwords regularly, create strong passwords and understand privacy and permissions** In this lesson, pupils will develop their knowledge of privacy and security by exploring permissions that websites and apps request (and the reasons they do so). Pupils will begin to understand terms and conditions and why it is important to not just blindly tick yes to everything on the internet. They will create new strong passwords containing random letters, numbers and symbols and build upon their knowledge of why it is important to change these regularly. **Key Vocabulary** permissions, data, accept, company, money, profit, password, strong, special character, share, secure	**Lesson 1 – Online Reputation & Managing Online Information** **Mission:** **To ensure your digital identity is protected and spot when something online might not be as it seems** In this lesson, pupils will develop their knowledge of digital personality and why it is important to develop a positive one. They will look at how they can maintain a degree of anonymity online. Pupils will learn how to take practical steps to identify spam and how to identify, flag, report and block anything they deem suspicious, inappropriate or harmful. Pupils will assess their knowledge of Digital Citizenship via the Google Be Internet Legends game 'Interland'. **Key Vocabulary** digital personality, anonymity, anonymous, phishing, scam, spam, cyber-criminal, flag, report, block, grooming, harmful, inappropriate, identify, URL, secure, unsafe, well-being
Lesson 2 – Self-Image and Identity **Mission:** **To update our avatar for online presence and demonstrate a positive online presence** In this lesson, pupils will learn the difference between copying, modifying and altering information and the reasons why people do this online. They will learn how to ensure they keep their online identity safe, positive, and respectful, ensuring they think about their future when they post anything online. Pupils will then update their online avatars to a more recent likeness of themselves. **Key Vocabulary** copy, modify, alter, impersonate, parody, prank, bully, catfish, identity, avatar, safety, security, presence, represent, change	**Lesson 2 – Online Relationships & Online Bullying** **Mission:** **To debate whether the sharing of certain content online is okay** In this lesson, pupils will explore different scenarios concerning sharing of content online and how they would deal with this. They will discuss and debate with each other, considering the consequences of certain decisions, actions, and reactions that they or others may make. They will look at how to protect their future by making intelligent informed decisions while communicating online. **Key Vocabulary** debate, decisions, actions, reactions, consequences, communication, historical, future, sharing
Lesson 3 – Online Reputation & Managing Online Information **Mission:** **Be sceptical and evaluate digital content before taking it as fact** In this lesson, pupils will look at how the internet can be used to influence people, the reason this happens, and how they can be more aware of it. They will develop a knowledge of how companies can influence what you see online by using data to target posts to audiences, and use paid partnerships, boosted posts, sponsored ads, etc. Pupils will then use their Knowledge CHASERS skills to check the validity of the Safe Zone 'Paid Partnership' with Dog Island. **Key Vocabulary** influence, commercialism, advertising, sponsor, promote, monetise, cookies, information, product placement, tailor, developer, fact, fiction	**Lesson 3 –Self-Image and Identity** **Mission:** **To understand and challenge stereotypes online** In this lesson, pupils will learn what stereotypes are. They will learn about and discuss common stereotypes they may come across online. Pupils will be tasked with challenging their own stereotypes and they will investigate instances where people have broken down stereotypes. They will take part in a quiz that will help pupils recognise how gender stereotyping can impact them in their online spaces and encourage them to respect and celebrate differences. **Key Vocabulary** stereotype, belief, gender, race, disability, challenge, rights, difficulties, inspiration

Computing

Lesson 4 – Health, Well-Being and Lifestyle

Mission:

To understand the effect technology can have on our health and well-being both positive and negative

In this lesson, pupils will look at the positive and negative impact technology can have on their health and well-being and will look at steps they can take to look after themselves whilst using tech. Pupils will look at mindfulness and meditation apps or videos to see the positive effect technology can have on their health, well-being, and lifestyle. Pupils will then develop their knowledge of online purchasing and the effect this can have on our health. They will learn about loot boxes and other online offers and why these can be particularly risky.

Key Vocabulary

mindfulness, meditation, relaxation, awareness, focus, health, mental health, hormones, age-appropriate, access, support, guidance, loot box, online purchasing, chance, gambling, finance

Lesson 5 – Copyright and Ownership

Mission:

To understand when online content can be reused and give examples

In this lesson, pupils will learn more about the reuse of content online. They will understand that some content is available to reuse and that some creators actively encourage users to repost their content. Pupils will review the copyright and content sharing guidance of gaming companies and use these to create their own tutorials or information pages.

Key Vocabulary

reuse, sharing, content, ownership, fair dealing/use, breach, license, guidelines, attribution

Lesson 6 – Online Relationships & Online Bullying

Mission:

To create an anti-cyberbullying video

In this lesson, pupils will develop their knowledge of cyber-bullying and staying safe online. They will play the Think U Know Band Runner game where they face different online scenarios and must deal with them appropriately. They will then develop their knowledge of online relationships and online Bullying by watching a series of videos and researching using the internet. Finally, they will use this knowledge to create an anti-cyberbullying video for others to watch.

Key Vocabulary

communication, scenario, emoji, information, help, advice, trusted adult, cyberbullying

Lesson 4 – Health, Well-Being and Lifestyle & Managing Online Information

Mission:

To understand the challenges we face while using technology and identify strategies to stay healthy

In this lesson, pupils will delve deeper into the challenges we face whilst using technology, for example, persuasive design features and disinformation. They will understand that it is up to the user to make more informed choices about their behaviour and take control of their health and well-being. Pupils will create a list of advice for others on how to stay safe and healthy, whilst still being able to regularly access technology.

Key Vocabulary

Manipulation, persuasion, engagement, inappropriate, misinformation, disinformation, PEGI, restrictions, notifications, addiction

Lesson 5 & 6 – Privacy and Security & Copyright and Ownership

Mission:

To understand good practice in terms of privacy and security and pass this on to others

Over the course of these final two lessons, pupils will develop their knowledge of privacy and security, looking at security updates, privacy settings, phishing scams, and cyber-attacks, etc. A pupil-led activity will follow where children should demonstrate their knowledge of privacy and security, and copyright and ownership, by guiding others.

Key Vocabulary

passwords, cyber-attack, updates, settings, security, permissions, consent, protect, guide, help, advice

Computing

End Goals
Adventurers / LKS2
Our aim in teaching computing in Adventurers is to embed pupils' knowledge of computing within the context of the world around them. Adventurers ensures that pupils should become increasingly digitally literate, able to use, and express themselves and develop their ideas through, information and communication technology, and associated technical vocabulary. They should learn about computer networks and the history of the internet, key moments and figures involved in shaping the World Wide Web, and how this allows communication around the world. Via our 'Safe Zone' lessons, pupils should deepen their knowledge of digital citizenship, begin to evaluate the validity of online content, and understand further the concepts of copyright and ownership. Pupils will develop further computational skills to create and manipulate programmes, using repetition, loops and selection and be able to talk about intended and specific outcomes. Pupils should have a secure understanding of the role of algorithms and be able to successfully use them within programming, developing their debugging skills. Adventurers continues to bring computing to life for the pupils, drawing upon their interests and experiences and placing computing into relevant contexts for learning. For example, during 'That's All Folks!' pupils should learn about animation, from its very beginnings through to modern-day technologies. As well as using digital tools to create animated media, pupils should expand their skillset with a greater range of tools and techniques to create digital multimedia for a purpose, critically evaluating their process.
Navigators / UKS2
Our aim in teaching computing in Navigators is to deepen pupils' understanding and appreciation of computational thinking and creativity to understand and change the world. Through a curriculum deeply rooted in digital citizenship, via 'Safe Zone', pupils will broaden their knowledge of how to use devices safely and discerningly to become safe, active, and responsible digital citizens. They should be capable of making well-informed decisions about their safety online, as well as being adept at critically evaluating digital content, challenging the validity of sources of information online, and forming their own opinions. Pupils should be able to choose from a variety of software and online resources to create their own digital content. They should develop a range of skills, including being able to analyse, evaluate and present information on a range of devices for specific purposes. Pupils' knowledge of computer science should broaden to allow them to confront more complex computational concepts, such as creating and combining variables within programming and become proficient at debugging these using computational thinking skills. Pupils should continue to learn computing through relevant contexts. For example, in 'A World of Bright Ideas', while learning about the process of innovation and invention, pupils will develop their own computer games for different audiences. In 'Mission Control', whilst researching, pupils will learn to use search engines, know how results are selected and ranked and will deepen their knowledge of the history of digital technologies, including satellites, and how these technologies are shaping the future.