COMPUTING
Progression of Knowledge and Skills

ROBERT BLAIR SCHOOL

Computer Science

Programming

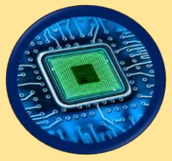
Pupils will learn how to interpret, create and evaluate algorithms. They will be taught to program to accomplish specific goals and to detect and correct errors

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
To program a floor robot to follow a simple set of Instructions. (N). To complete a simple program on an electronic device to achieve a goal, (BeeBots). (R).	**Floor Robots** • To explain what a given command will do. • To act out a given word. • To combine forwards and backwards commands to make a sequence. • To combine four direction commands to make sequences. • To plan a simple program. • To find more than one solution to a problem. **Programming Animations** • To choose a command for a given purpose. • To show that a series of commands can be joined together. • To identify the effect of changing a value. • To explain that each sprite has its own instructions. • To design the parts of a project. • To use my algorithm to create a program.	**Robot Algorithms** • To describe a series of instructions as a sequence. • To explain what happens when we change the order of instructions. • To use logical reasoning to predict the outcome of a program, (series of commands). • To explain that programming projects can have code and artwork. • To design an algorithm. • To create and debug a program that I have written. **An Introduction to Quizzes** • To explain that a sequence of commands has a start. • To explain that a sequence of commands has an outcome. • To create a program using a given design. • To change a given design. • To create a program using my own design. • To decide how my project can be improved.	**Sequence in Music** • To explore a new programming environment. • To identify that commands have an outcome. • To explain that a program has a start. • To recognise that a sequence of commands can have an order. • To change the appearance of my project. • To create a project from a task description. **Events and Actions** • To explain how a sprite moves in an existing project. • To create a program to move a sprite in four directions. • To adapt a program to a new context. • To develop my program by adding features. • To identify and fix bugs in a program. • To design and create a maze based challenge.	**Repetition in Games** • To develop the use of count controlled loops in a different programming environment. • To explain that in programming there are infinite loops and count controlled loops. • To develop a design which includes two or more loops which run at the same time. • To modify an infinite loop in a given program. • To design a project that includes repetition. • To create a project that includes repetition.	**Selection in Quizzes** • To explain how selection is used in computer programs. • To relate that a conditional statement connects a condition to an outcome. • To explain how selection directs the flow of a program. • To design a program which uses selection. • To create a program which uses selection. • To evaluate my program. **Selection in Physical Computing** • To control a simple circuit connected to a computer. • To write a program that includes count controlled loops. • To explain that a loop can stop when a condition is met, e.g. number of times. • To conclude that a loop can be used to repeatedly check whether a condition has been met. • To design a physical project that includes selection. • To create a controllable system that includes selection.	**Sensing** • To create a program to run on a controllable device. • To explain that selection can control the flow of a program. • To update a variable with a user input. • To use a conditional statement to compare a variable to a value. • To design a project that uses inputs and outputs on a controllable device. • To develop a program to use inputs and outputs on a controllable device. **Variables in Games** • To define a 'variable' as something that is changeable. • To explain why a variable is used in a program. • To choose how to improve a game by using variables. • To design a project that builds on a given example. • To use my design to create a project. • To evaluate my project.

Knowledge and skills sequencing COMPUTING

C	Data and	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6

Information Technology

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
information Pupils will learn how to collect, analyse, evaluate and present data and information	To group objects by type. (N). To discuss data and information and understand that things can be categorised using labels (R). To create tally charts. (R).	**Grouping Data** • To label objects. • To identify that objects can be counted. • To describe objects in different ways. • To count objects with the same properties. • To compare groups of objects. • To answer questions about groups of objects.	**Pictograms** • To recognise that we can count and compare objects using tally charts. • To recognise that objects can be represented as pictures. • To create a pictogram. • To select objects by attribute and make comparisons. • To recognise that people can be described by attributes. • To explain that we can present information using a computer	**Branching Databases** • To create questions with yes/no answers. • To identify the object attributes needed to collect relevant data. • To create a branching database. • To explain why it is helpful for a database to be well structured. • To identify objects using a branching database. • To compare the information shown in a pictogram with a branching database		**Data Logging** • To explain that data gathered over time can be used to answer questions. • To use a digital device to collect data automatically. • To explain that a data logger collects 'data points' from sensors over time. • To use data collected over a long duration to find information. • To identify the data needed to answer questions. • To use collected data to answer questions.	Introduction to Spread sheets • To identify questions which can be answered using data. • To explain that objects can be described using data. • To explain that formula can be used to produce calculated data. • To apply formulas to data including duplicating. • To create a spread sheet to plan an event. • To choose suitable ways to present data.
Computer systems and networks  Pupils will learn about computer systems, networks and how they are used. They will also learn about the internet and different types of hardware and Software.	To know that a computer has a mouse and a keyboard and be able to recognise them. (N). To use a mouse to manipulate a program. (R). To use a keyboard and understand keys represent letters and numbers. (R). To understand that a tablet is different to a computer in some ways. (R).	**Technology Around Us** • To identify technology. • To identify a computer and its main parts. • To use a mouse in different ways. • To use a keyboard to type. • To use the keyboard to edit text. • To create rules for using technology responsibly	**IT Around Us** • To recognise the uses and features of information technology. • To identify information technology in the home. • To identify information technology beyond school. • To explain how information technology benefits us • To show how to use information technology safely. • To recognise that choices are made when using information technology	**Connecting Computers** • To explain how digital devices function. • To identify input and output devices. • To recognise how digital devices can change the way we work. • To explain how a computer network can be used to share information. • To explore how digital devices can be connected. • To recognise the physical components of a network.	**The Internet** • To describe how networks physically connect to other networks. • To recognise how networked devices make up the internet. • To outline how websites can be shared via the World Wide Web (WWW). • To describe how content can be added and accessed on the World Wide Web (WWW). • To recognise how the content of the WWW is created by people. • To evaluate the consequences of unreliable content.	**Sharing information** • To explain that computers can be connected together to form systems. • To recognise the role of computer systems in our lives. • To recognise how information is transferred over the internet. • To explain how sharing information online lets people in different places work together. • To contribute to a shared project online. • To evaluate different ways of working together online.	**Communication** • To identify how to use a search engine. • To describe how search engines select results. • To explain how search results are ranked. • To recognise why the order of results is important, and to whom. • To recognise how we communicate using technology. • To evaluate different methods of online communication.

Knowledge and skills sequencing COMPUTING

—	Creating	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6

	media Pupils will learn about the design and development of digital media in different forms. They will learn how to collaborate online, evaluate online content and how to communicate , create and present content in a respectful and responsible way.	To independently listen to digital audio. (N). To take photographs using a digital device (N/R). To record video using a digital device. (R). To record audio. (R).	**Digital Painting** • To describe what different free-hand tools do. • To use the shape tool and the line tools. • To make careful choices when painting a digital picture. • To explain why I chose the tools I used. • To use a computer on my own to paint a picture. • To compare painting a picture on a computer and on paper. **Digital Writing** • To use a computer to write. • To add and remove text on a computer. • To identify that the look of text can be changed on a computer. • To make careful choices when changing text. • To explain why I used the tools that I chose. • To compare writing on a computer with writing on paper.	**Making Music** • To say how music can make us feel. • To identify that there are patterns in music. To describe how music can be used in different ways. • To show how music is made from a series of notes. • To create music for a purpose. • To review and refine our computer work. **Digital Photography** • To use a digital device to take a photograph. • To make choices when taking a photograph. • To describe what makes a good photograph. • To decide how photographs can be improved. • To use tools to change an image. • To recognise that images can be changed	**Desktop Publishing** • To recognise how text and images convey information. • To recognise that text and layout can be edited. • To choose appropriate page settings. • To add content to a desktop publishing publication. • To consider how different layouts can suit different purposes. • To consider the benefits of desktop publishing. **Stop-Frame Animation** • To explain that animation is a sequence of drawings or photographs. • To relate animated movement with a sequence of images. • To plan an animation. • To identify the need to work consistently and carefully. • To review and improve an animation. • To evaluate the impact of adding other media to an animation.	**Audio Editing** • To identify that sound can be digitally recorded. • To use a digital device to record sound. • To explain that a digital recording is stored as a file. • To explain that audio can be changed through editing. • To show that different types of audio can be combined and played together. • To evaluate editing choices made.	**Vector Drawing** • To identify that drawing tools can be used to produce different outcomes. • To create a vector drawing by combining shapes. • To use tools to achieve a desired effect. • To recognise that vector drawings consist of layers. • To group objects to make them easier to work with. • To evaluate my vector drawing. **Video Editing** • To explain what makes a video effective. • To identify digital devices that can record video. • To capture video using a range of techniques. • To create a storyboard • To identify that video can be improved through reshooting and editing. • To consider the impact of the choices made when making and sharing a video.	**3D Modelling** • To use a computer to create and manipulate three dimensional (3D) digital objects. • To compare working digitally with 2D and 3D graphics. • To construct a digital 3D model of a physical object. To identify that physical objects can be broken down into a collection of 3D shapes. • To design a digital model by combining 3D objects. To develop and improve a digital 3D model. **Web Page Creation** • To review an existing website and consider its structure. • To plan the features of a web page. • To consider the ownership and use of images, (copyright). • To recognise the need to preview pages. • To outline the need for a navigation path. • To recognise the implications of linking to content owned by other people.

Knowledge and skills sequencing COMPUTING

Digital Literacy

Digital Literacy	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
 This is woven through the key concepts above, ensuring pupils know how to operate devices, how to search and select information, and how to use digital devices safely and responsibly	Knows how to access information on a device e.g.: open an app, open a link, use a QR code Knows to ask an adult if they want to go online	Review SMART rules <u>Online Safety</u> • Discuss what the internet is and how it can be used. • Recognise that the internet may affect mood or emotions. • Recognise how internet use can affect and upset other. • Identify which information is appropriate to share and post online and which is not.	Review SMART rules <u>Online Safety</u> • Explain what is meant by online information. • Recognise what information is safe to be shared online. • Explain why we need passwords and what makes a strong password. • Understand that they need to ask permission before sharing content online and explain why. • Understand that they have the right to deny their permission to information about them being shared online. • Say who they can ask for help with online worries. • Use some strategies to work out if online information is reliable or not.	Review SMART rules <u>Online Safety</u> • Differentiate between fact, opinion and belief online. • Explain how to deal with upsetting online content. • Recognise that digital devices communicate with each other to share personal information. • Explain what social media platforms are used for. • Recognise why social media platforms are age-restricted.	Review SMART rules <u>Online Safety</u> • Describe how to search over multiple platforms and are aware of the accuracy of the results presented. • Describe some of the methods used to persuade people to buy online. • Explain the difference between fact, opinion and belief and recognise these online. • Explain what a bot is and give examples of different bots. • Explain some positive and negative distractions of using technology and small strategies on how to reduce the amount of time spent on technology.	Review SMART rules <u>Online Safety</u> • Understand that passwords need to be strong and that apps require some form of passwords. • Recognise a couple of the different types of online communication and know who to go to if they need help with any communication matters online. • Search for simple information about a person, such as their birthday or key life moments. • Know what bullying is and that it can occur both online and in the real world. • Recognise when health and wellbeing are being affected in either a positive or negative way through online use. • Offer a couple of advice tips to combat the negative effects of online use.	Review SMART rules <u>Online Safety</u> • Discuss a range of issues online that can leave pupils feeling sad, worried or uncomfortable and can describe numerous ways to get help. • Be aware of how to seek consent from others before sharing material online and can describe how content can still be shared online even if it is set to private. • Explain what a 'digital reputation' is and what it can consist of. • Understand the importance of capturing evidence of online bullying and can demonstrate some of these methods on the devices used at school. • Describe ways to manage passwords and strategies to add extra security such as two-factor authentication. • Explain what to do if passwords are shared, lost, or stolen. • Describe strategies to identify scams. • Explain ways to increase their privacy settings and understand why it is important to keep their software updated.